Violent Deaths in Massachusetts: Surveillance Update 2005

Massachusetts Department of Public Health
Bureau of Health Information, Statistics, Research, and Evaluation
Injury Surveillance Program
Massachusetts Violent Death Reporting System

Violent Deaths in Massachusetts: Surveillance Update 2005

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For other Department of Public Health data, register for MassCHIP, the Department's free internet-accessible data warehouse: http://masschip.state.ma.us/

MAVDRS Advisory Group Members

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Executive Summary

For inclusion in the Massachusetts Violent Death Reporting System (MAVDRS), a violent death is generally defined as a death which resulted from the intentional use of physical force or power against oneself, another person, or persons. MAVDRS includes violent deaths resulting from suicide, homicide, legal intervention (excluding execution), those of undetermined intent and all firearm-related deaths, regardless of intent. Final inclusion in the system is determined by ICD-10 code. All participating NVDRS states use the same data inclusion standards and variable definitions established by the CDC.

In 2005, there were 23 victims who died in Massachusetts that were residents of other states and one was a resident of another country. There were seven victims who were injured in another state or country, but were brought to Massachusetts where they later died. These two groups are included in the MAVDRS database as they are occurrent deaths (deaths occurring in Massachusetts). However, there were 27 Massachusetts residents who died from a violent death in another state and are not included in the MAVDRS database, but may be captured by another NVDRS–funded state.

Summary of Findings

Overview of Violent Deaths

An important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning (drug overdose) deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years. This is similar to how these deaths are classified in other states.

In 2005, 741 violent deaths occurred in Massachusetts as a result of 727 separate incidents. Ninety-eight percent of incidents consisted of only one death. The remaining 14 incidents involved more than one violent death in multiple victim incidents (multiple homicides or suicides) or combined homicide/suicide incidents.

On average, 14 violent deaths a week occurred in the Commonwealth. The rate of violent death for all intents was 11.5/100,000. Of the 741 violent deaths in 2005, 63% (N=468) were suicides, 24% (N=181) were homicides, and 12% (N=88) were of undetermined intent. Suicides were approximately 2.6 times more frequent than homicides. The highest violent death rate (16.5/100,000) was among age groups 25-34. Black, non-Hispanics had the highest rate overall (21.8/100,000) compared to the range of 6.7 to 12.8/100,000 for all other groups.

Suicides

From 2004 to 2005, the number of suicides increased by 8.3% (N=432 in 2004 to N=468 in 2005). In 2005, there were approximately nine suicides per week. Suicides increased by 32% for females from 2004 to 2005 (N=88 in 2004 and N=116 in 2005) and remained relatively stable for males (N=344 in 2004 and N=352 in 2005). However, the suicide rate for males was approximately three times higher than that of females. Among all age groups, suicide rates were highest among 35-44 year olds. The most common suicide method was hanging/strangulation/ suffocation which accounted for 43% of suicides. Of these, the majority (94%) were due to hanging by ligature. There were 407 victims of suicide that had information about circumstances noted (87% of the total number of suicides). Of these suicides, the most common circumstance was having a current mental health problem. This circumstance was noted for 43% of the suicide victims and includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.

Homicides

From 2004 to 2005, the number of homicides remained stable (N=183 in 2004 and N=181 in 2005). For males, the number of homicides remained the same (N= 152) and the number of female homicides decreased by two (from 31 in 2004 to 29 in 2005). Youth, ages 15-24, had the highest homicide number (N=81) and rate (9.1/100,000), which was over three times higher than the statewide rate of 2.8/100,000. Sixty percent (N=108) of homicides were due to firearms. There were 109 homicides with at least one circumstance known regarding the homicide (60% of the total number of homicides). Of these, 43% (N=47) were precipitated by an argument, abuse or conflict.

Deaths of Undetermined Intent

The change mentioned above regarding the OCME policy in assigning poisoning deaths mostly affected the number of undetermined deaths in Massachusetts. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years and is similar to how they are classified in most other states. Because of this, caution should be used when comparing 2005 data to previous years' data.

To demonstrate, in 2004, there were 1,243 total violent deaths, with 50% (N=625) classified as undetermined intent. Of those undetermined intent deaths, 90% (N=560) were due to poisoning/drug overdoses. In 2005, there were a total of 741 violent deaths and only 12% (N=88) were of undetermined intent. Of these 88 deaths, 73% (N=64) were due to poisonings/drug overdoses. Due to the reclassification of many undetermined deaths, comparisons in this report are limited to those between homicides and suicides, where direct comparisons of 2004 and 2005 are essentially unaffected.[1]

Legal Intervention Deaths

Due to differences in death certificate wording, only one legal intervention death was captured by ICD-10 code; an additional two deaths were ICD-10-coded as homicides and one was coded as undetermined intent because information on the police involvement was not present on the death certificate. These cases were identified as legal intervention during the data abstraction of the Medical Examiner and police reports. These three legal intervention deaths are included in the analysis on homicides and deaths of undetermined intent.

Unintentional Firearm Deaths

Massachusetts reported three unintentional firearm deaths based on ICD-10 code for 2005.

[1] For more information regarding unintentional poisonings, please see the Massachusetts Department of Public Health's "Injuries to Massachusetts Residents, 2005" from the Department's Injury Surveillance Program. You can obtain a copy of this report by contacting Beth Hume at (617) 624-5648 or via email at beth.hume@state.ma.us. The report is also available electronically at: http://www.mass.gov/Eeohhs2/docs/dph/injury_surveillance/injury_report_05.pdf

Introduction

Violent death represents a serious but preventable public health problem. The U.S. Centers for Disease Control and Prevention (CDC) introduced the National Violent Death Reporting System (NVDRS) in 2001 in order to improve the surveillance of violent deaths nationwide.[1] A violent death results from the intentional use of physical force or power against oneself, another person, or a group or community. Violent deaths include suicides, homicides, deaths due to legal intervention (excluding executions), deaths of undetermined intent, and firearm-related deaths, regardless of intent. Violent deaths are classified as undetermined when the medical examiner does not have enough information to make a determination of how the individual died: whether a death was unintentional, was deliberately self-inflicted, or was caused by an assault. While not enough is known about these deaths to definitively establish intent, they are included in NVDRS because useful information regarding the circumstances of the death may be available.

Currently operating in 17 states, NVDRS is a state-based surveillance system that compiles information on violent deaths in order to provide a detailed picture of how and why they occur. In Massachusetts, the Violent Death Reporting System is part of the Injury Surveillance Program within the Massachusetts Department of Public Health (MDPH). NVDRS utilizes multiple data sources, including death certificates, medical examiner files, and law enforcement records in creating its data records. The NVDRS is an incident-based surveillance system, enabling identification of multiple deaths from the same incident, as well as linking suspects associated with the incident. Decisions about whether two or more deaths belong to the same incident are determined by the timing of the injuries, rather than the timing of the deaths, and are based on a 24 hour rule and source documents indicating a clear link between the deaths.

Detailed information from multiple sources will enhance the ability of researchers, prevention specialists and policymakers to develop a better understanding of when, where, why and how violent deaths occur, as well as who is at risk. Information about the circumstances associated with violent death is a particularly unique and important feature of NVDRS, since it may help in identifying specific risk factors precipitating violence. The goal of NVDRS is to provide the information needed to reduce and to prevent violent death.

Objectives

With approximately 50,000 suicides and homicides taking place in the United States a year, the need for a national violent death surveillance system emerged as a significant public health issue in the late 1990s. Until recently, there was no comprehensive, incident-based public health surveillance system to collect information on these deaths and apply it to prevention efforts. With funding from the CDC, the Massachusetts Department of Public Health began collecting detailed information on violent deaths as part of NVDRS in 2003. This report summarizes results from the third year of data collection in Massachusetts.

Methods

Descriptive Statistics

In this report, information on violent deaths is summarized by counts, percentages, and rates. Simple counts represent the most basic measure of violent deaths and are important for quantifying the problem, while percentages offer a way of showing distributions in the underlying population relative to a factor of interest, such as age or gender. Rates add an additional level of detail by taking account of the size of the underlying population and facilitating comparisons between groups. Crude rates are presented throughout this report, unless otherwise noted, and are useful for developing community-level prevention strategies. Age-adjusted rates are provided in Appendix B to facilitate comparisons between communities or states which may have a widely disparate age distribution in the population. Death rates are expressed as the number of deaths per 100,000 population. Refer to the Technical Notes section of Appendix A for detailed information on population estimates used for calculating rates. Rates were calculated for specific demographic groups (i.e., age, gender, marital status, race/ethnicity, and level of education), as well as by county and city level. More extensive analysis of MAVDRS variables will be conducted as additional data years become available.

Case Definition and Data Source

Violent death cases in the MAVDRS database are identified by reviewing the “manner of death” field on death certificates. A record is created in the MAVDRS database for any death categorized as suicide, homicide, legal intervention (excluding execution), undetermined intent, and firearm-related, regardless of intent. For each record,

[1] Additional information on NVDRS can be found at http://www.cdc.gov/ncipc/profiles/nvdrs/facts.htm.

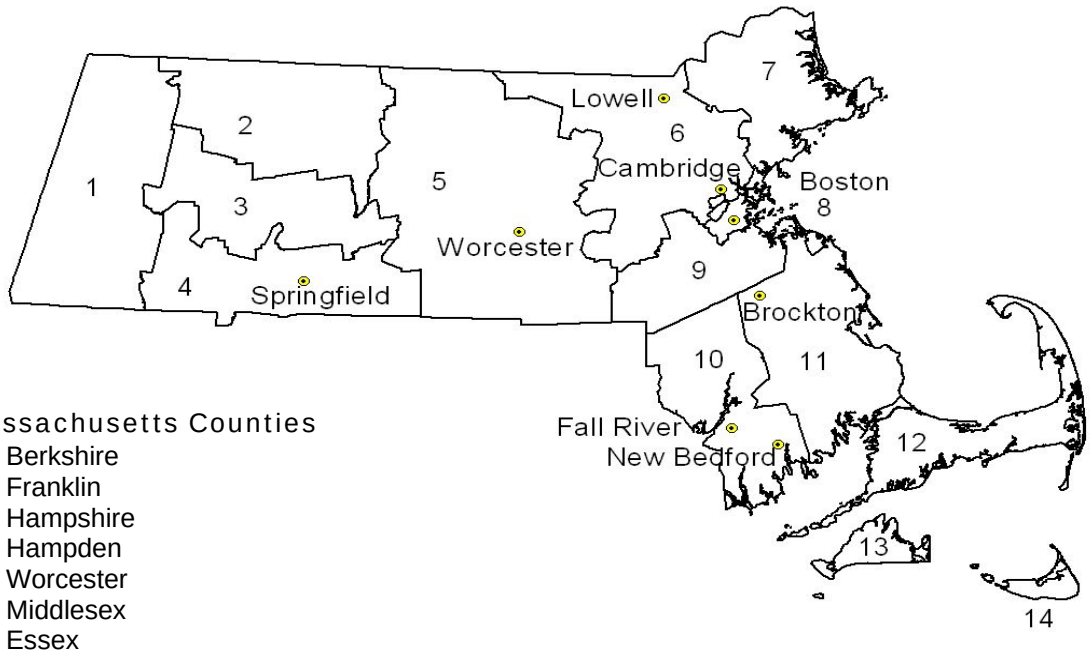
additional information is subsequently added from law enforcement and medical examiner sources. Law enforcement documents include police reports and ballistic reports from the Boston Police Department and the MA State Police Department. In addition, information from Supplemental Homicide Reports (SHR) and National Incident Based Reporting System (NIBRS) are obtained from the MA State Police Crime Reporting Unit (CRU). The Office of the Chief Medical Examiner provides autopsy reports, toxicology results, hospital records, and Emergency Medical Services (EMS) records. Additional supplemental sources are included where appropriate.

Over 270 data elements may be collected for each incident in the database, including information on the following when applicable: the incident, the victim and suspect, toxicology, weapon(s), circumstances associated with the relationship between suspect and victim. The ICD-10 (International Classification of Diseases, Tenth Revision) coded death file maintained by the Registry of Vital Records and Statistics (RVRS) is used to establish the final database for all cases meeting the MAVDRS case definition.

MAVDRS collects detailed information regarding the location of where the fatal injury occurred: the place (such as home, street, etc), the street address, city, county, and state. MAVDRS also collects data on state of death and place of death (such as emergency room, home, etc), but not the city where the actual death occurred. For purposes of this report, all tables, figures, and bullets that mentions any location or place of death, actually refers to the location where the fatal injury occurred.

For this report, violent deaths are analyzed on the basis of ICD-10 codes for the underlying cause of death field on death certificates, which includes most suicides, homicides, deaths of undetermined intent, deaths due to legal intervention (excluding legal executions), and unintentional firearm deaths that occurred in Massachusetts in 2005. The ICD-10 codes used for case inclusion in this report can be found in the Technical Notes section of Appendix A.

Location of Counties and Major Cities in Massachusetts



Massachusetts Counties

1. Berkshire
2. Franklin
3. Hampshire
4. Hampden
5. Worcester
6. Middlesex
7. Essex
8. Suffolk
9. Norfolk
10. Bristol
11. Plymouth
12. Barnstable
13. Dukes
14. Nantucket

Data Highlights for 2005:

- Violent deaths claimed the lives of an average of 14 victims a week in Massachusetts in 2005 (N= 741).
- Of the 741 violent deaths, 63% were suicides (N=468), 24% were homicides (N=181), and 12% (N=88) were undetermined.
- The classification change at the OCME in 2005 affected the number of undetermined intent deaths in Massachusetts; it was substantially less than in previous years. In 2005, this number is 88, only 12% of the total. In 2004, the number of deaths of undetermined intent was 625 (50% of the total).[1]

Compared to 2004:

- The number of deaths of undetermined intent in Massachusetts decreased by 40%. This decrease is due primarily to a change in the classification protocol in Massachusetts used by the OCME.[1]
- Suicides increased by 8.3% (from N=432 in 2004 to N=468 in 2005).
- Homicides remained stable (from N=183 to 2004 to N=181 in 2005).

Compared to the U.S.:

- The Massachusetts age-adjusted rates for all violent deaths in 2005 were lower than the U.S. age-adjusted rate.
- The Massachusetts age-adjusted suicide rate in 2005 was 7.0/100,000 compared to 10.8/100,000 for the U.S.
- The Massachusetts age-adjusted rate for homicide in 2005 was 2.8/100,000, much lower than the U.S. homicide age-adjusted rate of 6.1/100,000.
- The Massachusetts age-adjusted rate for deaths of undetermined intent in 2005 was 1.3/100,000 and the U.S. age-adjusted rate was 1.6/100,000.

[1] See Technical Notes in Appendix A for more information regarding this change.

Table 1.1: Type of Incidents and Victims: Number and Percent, MA 2005				
	Incident		Victim	
Intent	**N**	**Percent**	**N**	**Percent**
Suicides				
Single victim suicide	461	63.4	461	62.2
Homicides				
Single victim homicide	163	22.4	163	22.0
Multiple victim homicide	5	0.7	12	1.6
Combined homicide-suicide	6	0.8	12	1.6
Single victim undetermined	87	12.0	87	11.7
Combined undetermined-suicide	1	0.1	2	0.3
Unintentional firearm	3	0.4	3	0.4
Legal intervention[1]	1	0.1	1	0.1
Total	**727**	**100**	**741**	**100**

In 2005, a total of 727 incidents in the MAVDRS database accounted for 741 violent deaths.

Twelve incidents resulted in the death of more than one person (e.g. homicide/suicide, double homicide, etc), and consisted of 26 victims.

- 98% of incidents consisted of only one death.
- Multiple victim incidents included the following:
  - 1 quadruple homicide (1 or more persons kills four people in the same incident)
  - 4 double homicides (1 or more persons kills 2 people in the same incident)
  - There were no multiple suicides (e.g. double suicide, etc)
- There were six incidents where one person killed another, then killed him/herself in the same incident (combined homicide/suicide incident).
- There were three reported unintentional firearm deaths.

[1]Due to differences in death certificate wording, only one legal intervention death was captured by ICD-10 code; an additional two deaths were ICD-coded as homicides and one was coded as undetermined intent because information on the police involvement was not present on the death certificate. These three legal intervention deaths are included in all the analysis on homicides and undetermined intent deaths.

VIOLENT DEATH DEMOGRAPHICS

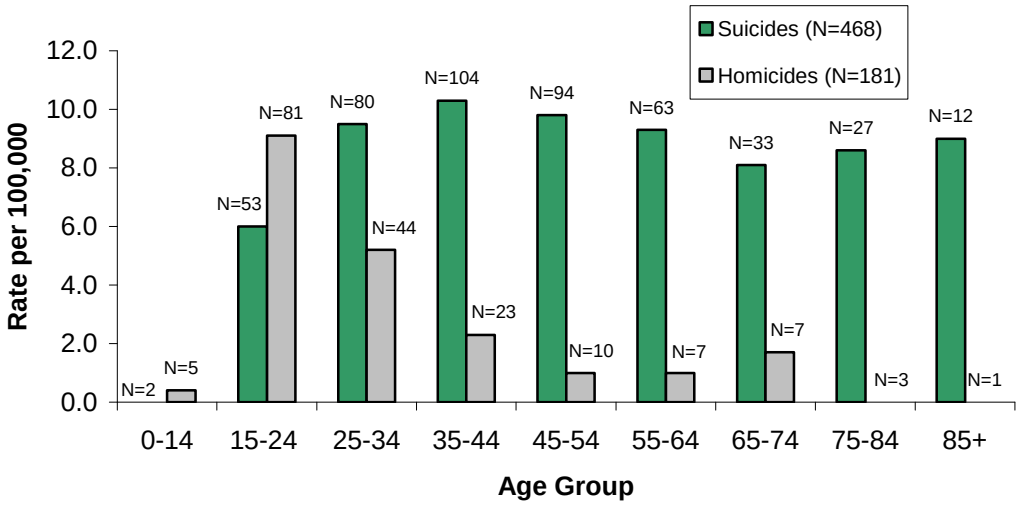
Table 1.2: Violent Deaths by Intent and Demographics: Number, Percent, and Rate, MA 2005			
	N	**Percent**	**Rate per 100,000[1]**
Intent			
Suicide	468	63.2	7.3
Homicide	181	24.4	2.8
Undetermined	88	11.9	1.4
Unintentional firearm	3	0.4	---
Legal intervention[2]	1	0.1	---
Sex			
Male	558	75.3	17.9
Female	183	24.7	5.5
Race/Ethnicity			
White, non-Hispanic	560	75.6	10.7
Black, non-Hispanic	86	11.6	21.8
Asian, non-Hispanic	21	2.8	6.7
Hispanic	64	8.6	12.8
Other/mixed[3]	10	1.3	---
Age Group			
0-14	9	1.2	0.7
15-24	142	19.2	16.0
25-34	138	18.6	16.5
35-44	155	20.9	15.3
45-54	133	18.0	13.9
55-64	80	10.8	11.8
65-74	40	5.4	9.8
75-84	30	4.1	9.6
85+	14	1.9	10.5
Total	**741**	**100**	**11.5**

ADDITIONAL FINDINGS FOR 2005:

- The youngest victim was 6 months old and the oldest was 97 years old. The mean age of all victims was 41.6 and the median age was 40.
- Nine victims of a violent death were homeless.
- Nineteen victims died while in custody, such as jail, state institution, or foster care.
- There were 61 war veterans[4] who died a violent death.
- Nineteen victims died of a violent death at their place of work.

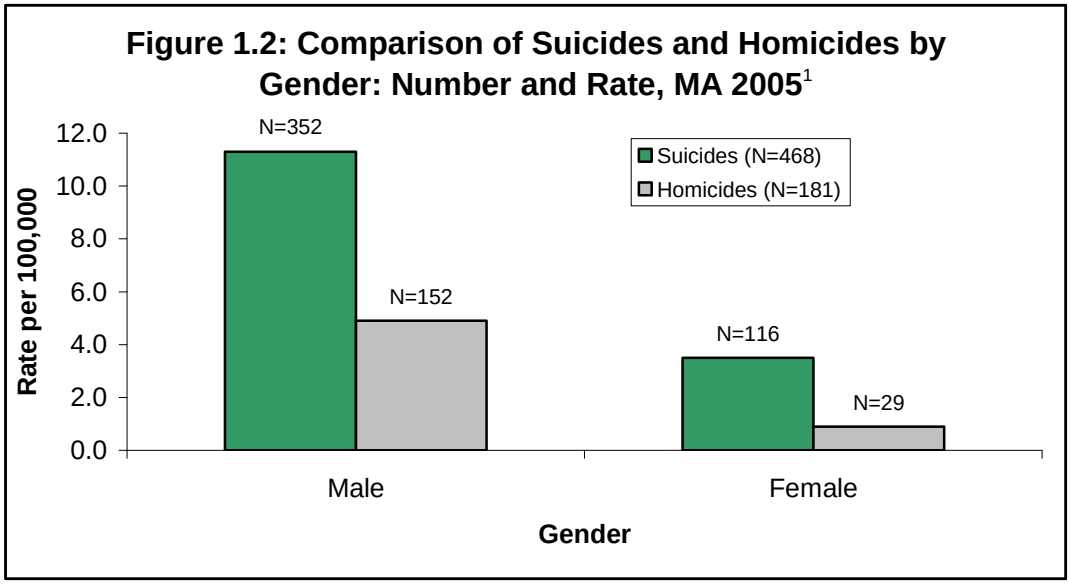
[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.
[2] Due to differences in death certificate wording, only one legal intervention death was captured by ICD-10 code; an additional two deaths were ICD-coded as homicides and one was coded as undetermined intent because information on the police involvement was not present on the death certificate. These three legal intervention deaths are included in all the analysis on homicides and undetermined intent deaths.
[3] Rates for other/mixed race were not calculated due to lack of denominator information.
[4] This report only includes information where the deceased was a U.S. veteran **and** the war in which they served was specified.

Figure 1.1: Comparison of Suicides and Homicides by Age Group: Number and Rate, MA 2005[1]

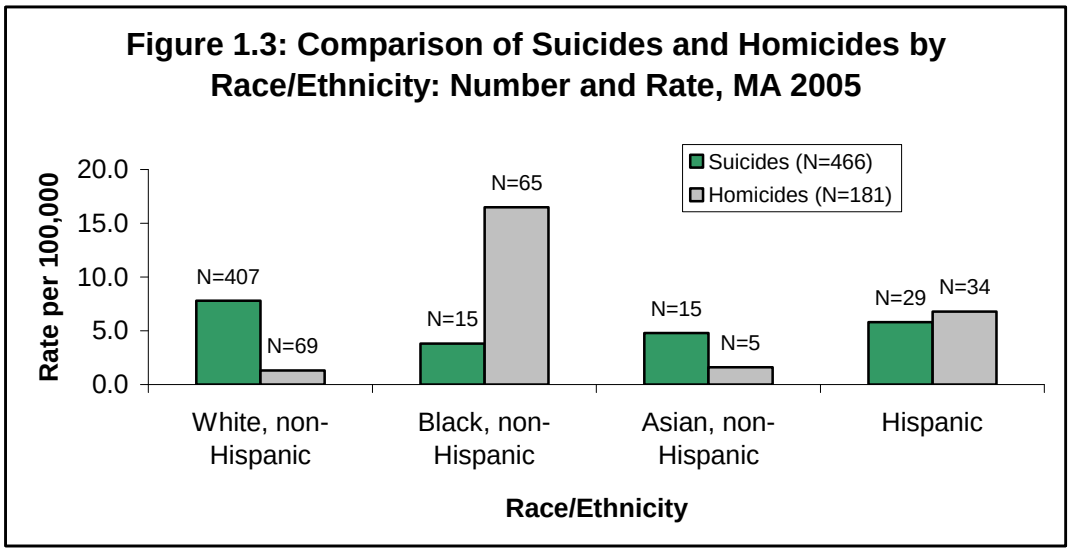


- Among 15-24 year olds, the rate of homicides (9.1/100,000) was 1.5 times higher than the rate of suicides (6.0/100,000).
- For all age groups age 25 and over, the rate of suicides was greater than the rate of homicides.
- The largest discrepancy in rates of homicides and suicides was among the 45-64 year olds, among whom the rate of suicides was nearly 9.5 times higher than the rate of homicides.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.



- For males, suicide rates (11.3/100,000) were 2.3 times higher than homicide rates (4.9/100,000).
- For females, suicide rates (3.5/100,000) were 3.9 times higher than homicide rates (0.9/100,000).



- Black, non-Hispanics and Hispanics had higher rates of homicide than suicide; whereas, White, non-Hispanics and Asian, non-Hispanics had higher rates of suicide than homicide.
- Among White, non-Hispanics, the suicide rate (7.8/100,000) was 6 times higher than the homicide rate 1.3/100,000).
- Among Black, non-Hispanics, the homicide rate (16.5/100,000) was 4.3 times higher than the suicide rate (3.8/100,000).
- Among Asian, non-Hispanics, the suicide rate (4.8/100,000) was three times higher than the homicide rate (1.6/100,000).
- Among Hispanics, the homicide rate (6.8/100,000) was 1.2 times higher than the suicide rate (5.8/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rates.

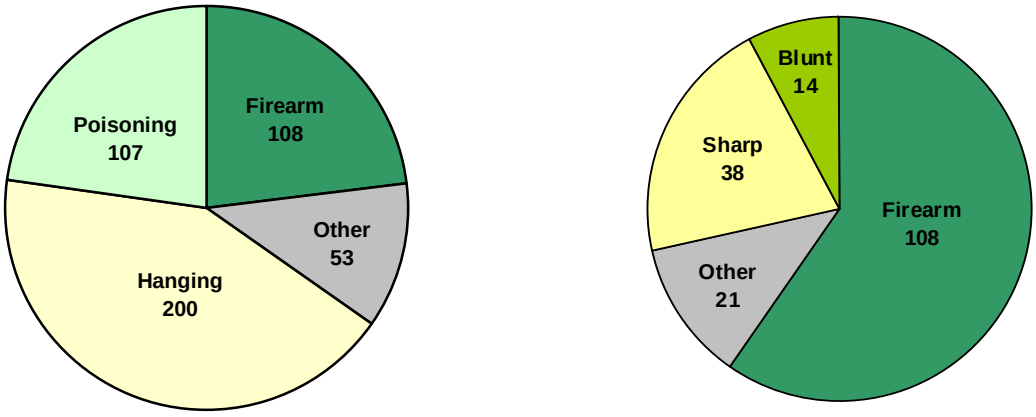
METHODS OF SUICIDES AND HOMICIDES

MAVDRS collects information on the cause or weapon used to inflict the fatal injury. A weapon can be a firearm (e.g. handgun, shotgun), a sharp instrument (e.g. knife), a blunt instrument (e.g. baseball bat), fire/burns, transport vehicles (e.g. train), falls, etc. It may also refer to the method of death, for example, "hanging/ strangulation/suffocation" is defined as a weapon by NVDRS. This includes when someone hangs himself/herself, or when a person is manually strangled. NVDRS combines these asphyxiation-type deaths under one weapon called "hanging/strangulation/suffocation." In this report, this weapon is referred to as "hanging."

Another method/weapon is called "poisoning" and it most typically refers to drug overdoses, including alcohol, prescription drugs, street drugs, or a combination of these. A poisoning can also be gas, such as carbon monoxide or other toxic substances, like ethylene glycol (anti-freeze).

In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.

Figure 1.4: Comparison of Suicides and Homicides by Weapon, MA 2005



Suicides (N=468) Total N=649 Homicides (N=181)

- There were an equal number of suicides and homicides where the first weapon listed was a firearm (N=108).
- The weapon was a firearm in 60% of homicides, but only 23% of suicides.
- See Appendix A for a complete list of weapon variables that may be included in other weapon.

Data Highlights for 2005:

- An average of nine suicides per week occurred in 2005, more than one each day (N=468).
- The highest suicide rate overall was among White, non-Hispanic males (N=304, 12.1/100,000).
- White, non-Hispanics had the highest suicide rate (7.8/100,000). Black, non-Hispanics had the lowest suicide rate (3.8/100,000).
- The suicide rate for males (11.3/100,000) was more than three times higher than the rate (3.5/100,000) for females.
- Approximately 72% of suicides occurred in a home or its surrounding area (yard, driveway, and porch).

Compared to 2004:

- The number of suicides increased by 32% for females (from N=88 in 2004 to 116 in 2005). The rate was 2.7/100,000 in 2004 and increased to 3.5/100,000 in 2005.
- The number of suicides remained relatively stable for males from 2004 to 2005 (N=344, N=352, respectively.)
- The number of Hispanic suicide victims increased between 2004 (N=12) and 2005 (N=29). The suicide rate for Hispanics increased by almost 2.5 times from 2.4/100,000 in 2004 to 5.8/100,000 in 2005.

Compared to the U.S.:

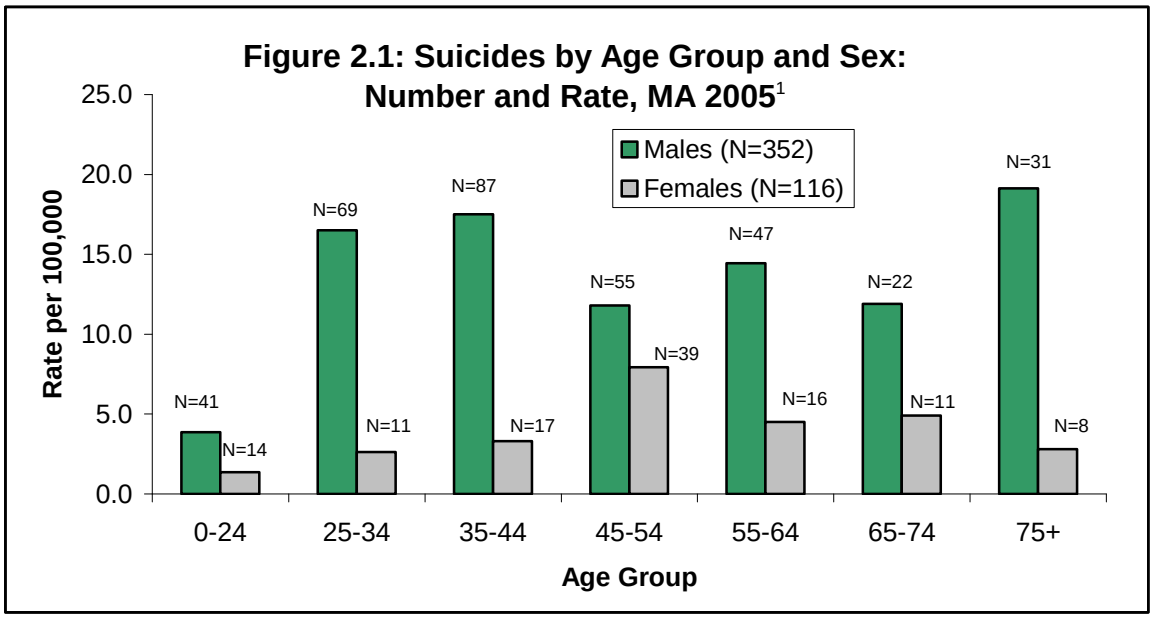
- Age-adjusted suicide rates for males and females were lower in Massachusetts than the U.S. average. The age-adjusted rate for male suicides in 2005 was 18.0/100,000 in the U.S. and 11.2/100,000 in Massachusetts.
- In 2005, the age-adjusted rate for female suicides was 4.4/100,000 in the U.S. and 3.3/100,000 in Massachusetts.
- In 2005, Massachusetts had a lower age-adjusted rate of firearm suicides (1.6/100,000) compared to the U.S. age-adjusted rate (5.6/100,000).

Table 2.1: Suicides by Demographics: Number, Percent, and Rate, MA 2005			
	N	Percent	Rate per 100,000[1]
Sex			
Male	352	75.2	11.3
Female	116	24.8	3.5
Race/Ethnicity			
White, non-Hispanic	407	87.0	7.8
Black, non-Hispanic	15	3.2	3.8
Asian, non-Hispanic	15	3.2	4.8
Hispanic	29	6.2	5.8
Other/mixed[2]	2	0.4	---
Age Group			
0-14	2	0.4	---
15-24	53	11.3	6.0
25-34	80	17.1	9.5
35-44	104	22.2	10.3
45-54	94	20.1	9.8
55-64	63	13.5	9.3
65-74	33	7.1	8.1
75-84	27	5.8	8.6
85+	12	2.6	9.0
Total	**468**	**100**	**7.3**

ADDITIONAL FINDINGS FOR 2005:

- The youngest suicide victim was 11 years old and the oldest was 97 years old.
- Fifty-nine percent of suicides were of persons aged 25-54. The mean age was 45.9 and the median age was 44.
- Forty-eight war veterans[3] completed suicide, accounting for 79% of the total violent deaths among war veterans (N=61).
- Suicides in 2005 also included:
  - seven victims that were homeless.
  - fourteen victims that completed suicide while in custody, such as jail, state institution, or foster care.
  - thirteen victims that died at their workplace.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.



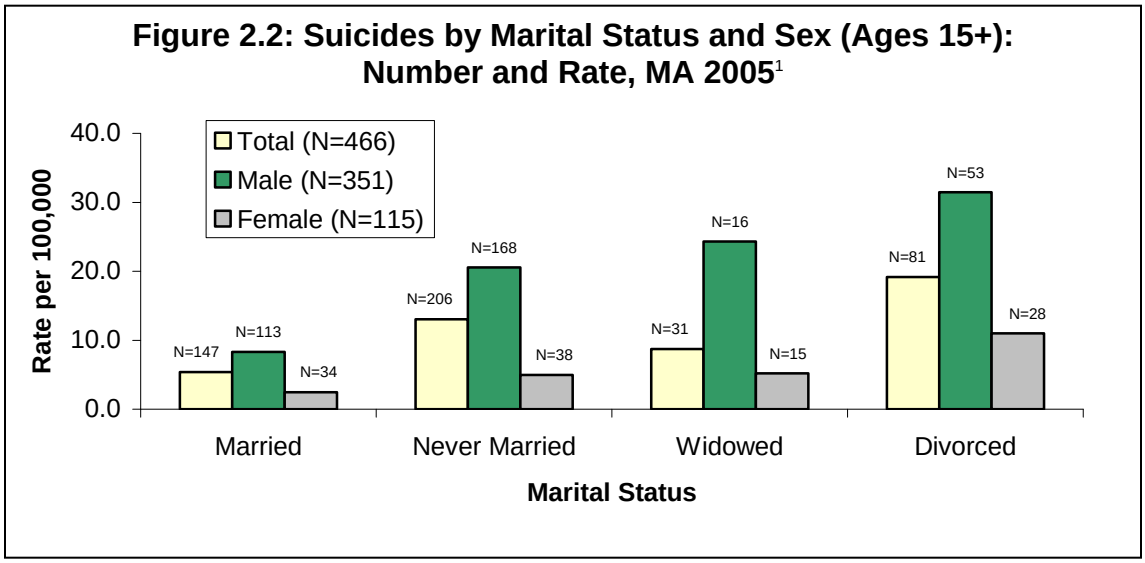
- Among youths age 15-19, the suicide rate was 4.1/100,000 (N=18), which was lower than the statewide rate of 7.3/100,000.
- The suicide rate for persons ages 20-24 was 7.9/100,000 (N=35), which is higher than the statewide rate.
- Among females, the age group of 45-54 had the highest suicide rate (7.9/100,000).
- Among males, those age 75 and over had the highest suicide rate (19.1/100,000).

Table 2.2: Suicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2005

	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White, non-Hispanic	103	88.8	3.8	304	86.4	12.1
Black, non-Hispanic	2	1.7	---	13	3.7	6.8
Asian, non-Hispanic	6	5.2	3.8	9	2.6	5.8
Hispanic	4	3.4	---	25	7.1	10.1
Other/mixed[2]	1	0.9	---	1	0.3	---
Total	**116**	**100**	**3.5**	**352**	**100**	**11.3**

- White, non-Hispanics had the highest rates for males (12.1/100,000). Among females, both White, non-Hispanics and Asian, non-Hispanics had the same suicide rate (3.8/100,000).
- There were 468 suicides: approximately 65% were White, non-Hispanic males and 22% were White, non-Hispanic females.
- Among males, Asian, non-Hispanics had the lowest suicide rate (5.8/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rate.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.



- In 2005, male suicide rates were always higher than the female suicide rate, regardless of marital status.
- Suicide rates were highest among divorced victims for both males (31.4/100,000) and females (11.0/100,000) and were lowest among married victims for both males (8.3/100,000) and females (2.5/100,000).

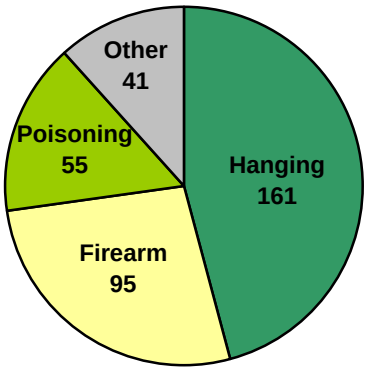
Table 2.3: Suicides (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2005

Years of Education[1]	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000[2]
1-8	5	5.0	10	3.2	15	3.6	8.6
9-11	8	8.0	26	8.4	34	8.3	16.8[3]
12	44	44.0	168	54.0	212	51.6	
13-16	31	31.0	77	24.8	108	26.3	5.7
17 +	12	12.0	30	9.6	42	10.2	6.3
Total	**100**	**100**	**311**	**100**	**411**	**100**	**9.8**

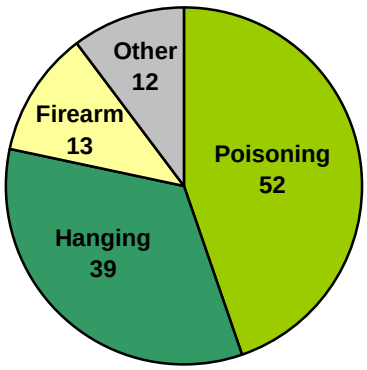
- The highest suicide rate was among victims with 9 through 12 years of education.[3]
- Approximately 64% of suicide victims age 25 and older had 12 or less years of education, while approximately 39% of the Massachusetts population age 25 and older has had 12 years of education or less.

[1] There were 2 victims whose data element for level of education was unknown.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.
[3] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 grades from 12th grade.

Figure 2.3: Suicide by Type of Weapon and Sex, MA 2005



Male (N=352)



Female (N=116)

Total (N=468)

- The above figure shows the three most common weapon types used. Other weapon types are combined into "Other," which includes sharp instruments, falls, drowning, other transport vehicle (e.g. train), fire or burns, and non-powder guns. See Appendix A for a complete list of weapons.

- Hanging is defined by NVDRS as hanging/strangulation/suffocation. In this report, this weapon is simply referred to as "hanging." This was the most common suicide method, accounting for 43% of suicides.
  - The majority (94%) of hanging suicides were due to hanging by ligature.
  - Among deaths by hanging, 81% were male and 19% were female.

- Among females, poisoning/drug overdose was the most common method (45%), followed by hanging (34%).

- For males, hanging was the most common method (46%). The second most common method involved the use of a firearm (27%), followed by poisoning/drug overdose (16%).

- Of these poisoning/drug overdose suicide deaths (N=107):
  - 74% (N=79) were due to the ingestion of a substance, including street/recreation drugs, alcohol, pharmaceutical prescriptions, and over-the counter medications
  - 15% (N=16) were due to carbon monoxide poisoning
  - 7% (N=8) were due to another poison (such as insecticides or helium)
  - 4% (N=4) were due to an unknown poison

- Of suicide poisoning deaths, 43.9% (N=60) were due to the ingestion of more than one poison/drug.

- No suicide victims died from a combination of two or more weapon types (e.g. firearm and stabbing combined).

Table 2.4: Suicide Method by Age Group: Number and Percent, MA 2005											
	0-14		15-24		25-44		45-64		65+		Total
Weapon	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N
Firearm	0	0.0	1	1.9	29	15.8	42	26.8	36	50.0	108
Poisoning	0	0.0	11	20.8	38	20.7	47	29.9	11	15.3	107
Hanging	2	100.0	37	69.8	95	51.6	47	29.9	19	26.4	200
Other[1]	0	0.0	4	7.5	22	12.0	21	13.4	6	8.3	53
Total	**2**	**100.0**	**53**	**100.0**	**184**	**100.0**	**157**	**100.0**	**72**	**100.0**	**468**

- Hanging was most common method of suicide through age 44.
- Among those ages 45-64, hanging and poisoning were equally common methods.
- Firearms were most commonly used among persons age 65 and over.

[1] Other weapon includes sharp instruments, fall, blunt, drowning, fire and burns, buses/motorcycles, train. See Appendix A for complete list.

LOCALITY OF SUICIDES

Table 2.5: Suicides by County: Number, Percent, and Rate, MA 2005			
County	**N**	**Percent**[1]	**Rate per 100,000**[2]
Population: 1,000,000+			
Middlesex	90	19.5	6.1
Population: 500,000 – 1,000,000			
Essex	65	14.1	8.9
Worcester	63	13.6	8.1
Norfolk	39	8.4	6.0
Suffolk	41	8.9	5.9
Bristol	24	5.2	4.4
Population: 100,000 – 500,000			
Hampden	47	10.2	10.2
Barnstable	19	4.1	8.4
Plymouth	41	8.9	8.3
Hampshire	11	2.4	7.2
Berkshire	9	2.0	6.8
Population: <100,000			
Franklin	11	2.4	15.2
Dukes	1	0.2	---
Nantucket	1	0.2	---
Unknown[2]	4	---	---
Outside MA[2]	2	---	---
Total	**468**	**100**	**7.3**

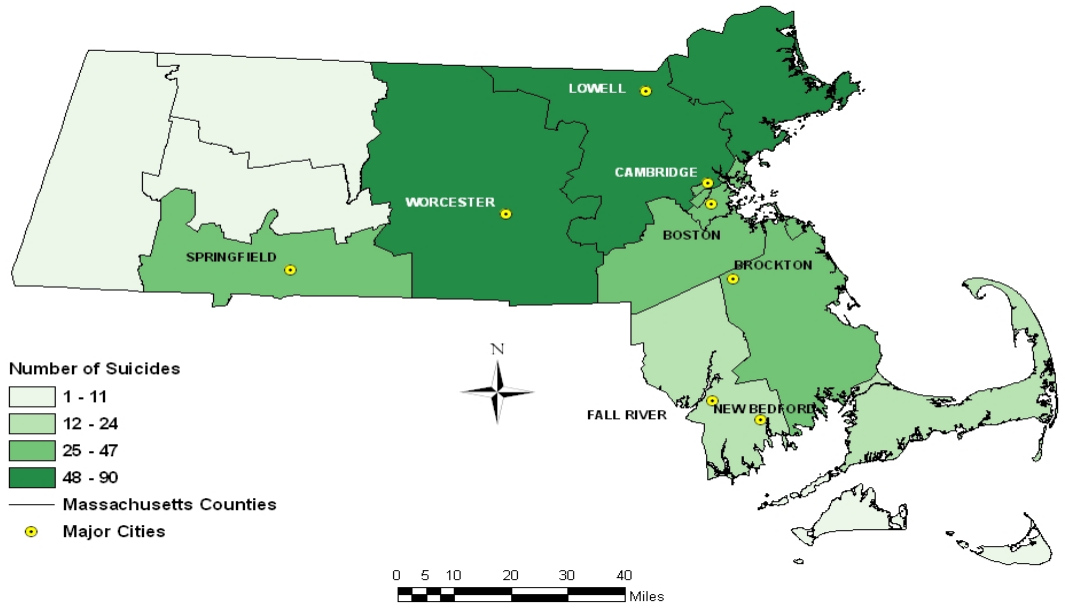
- Middlesex, Essex, and Worcester Counties had the highest number of suicides (90, 65, and 63 respectively). These three counties account for 47% of total suicides and 46% of the MA population.
- Among counties with population 500,000-1,000,000, Essex had the highest number and rate (N=65, 8.9/100,000). Rates ranged from 4.4/100,000 – 8.9/100,000 in these counties.
- Among counties with population 100,000-500,000, Hampden had the highest number (N=47) and rate (10.2/100,000). Rates ranged from 6.8/100,000 – 10.2/100,000 in these counties. These counties account for 27% of suicide occurrences but only 23% percent of the Massachusetts population.
- Numbers of suicides for some counties are low, therefore rates may be unstable. Caution should be exercised in interpretation of these rates.

[1] Percent is based on known Massachusetts county of injury (N=462). Rate was not calculated on unknown county of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with a small population. See Appendix B for age-adjusted rate.

LOCALITY OF SUICIDES

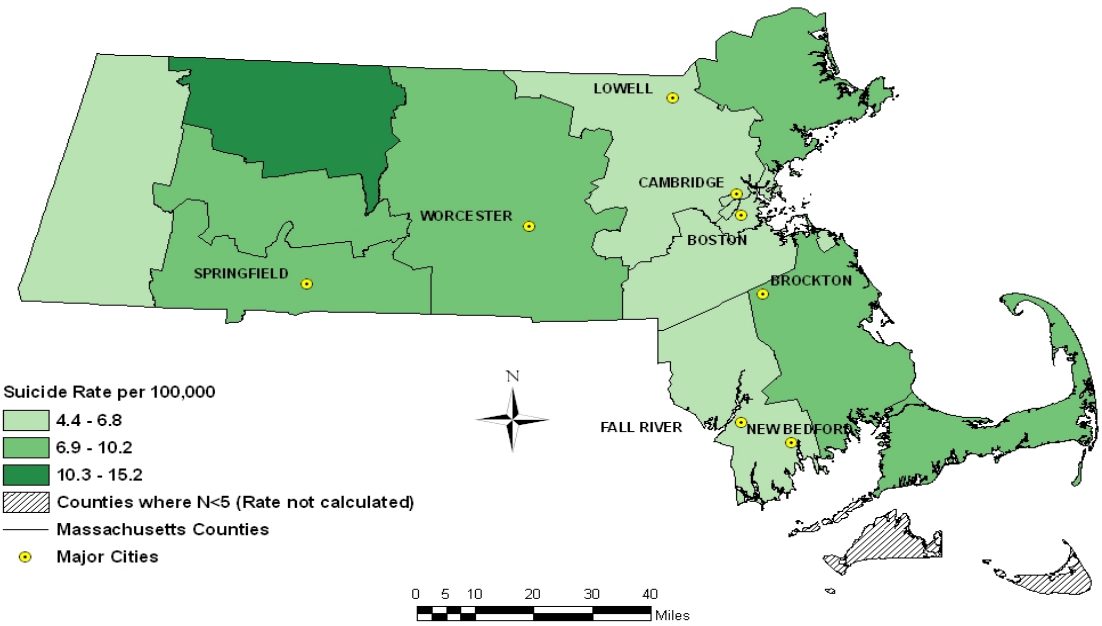
For county names please refer to the map on page 10 of the Introduction.

Figure 2.4: Suicides by County: Number, MA 2005



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS

Figure 2.5: Suicides by County: Rate, MA 2005



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS

LOCALITY OF SUICIDES

Table 2.6: Suicides by City/Town: Number, Percent, and Rate, MA 2005			
	N	**Percent**[1]	**Rate per 100,000**[2]
Group 1: Cities/Towns over 175,000 population:			
Worcester	14	3.0	8.0
Boston	27	5.8	4.8
Total Group 1	**41**	**8.9**	**5.6**
Group 2: Cities/Towns 75,000-175,000 population:			
Springfield	20	4.3	13.2
Lowell	12	2.6	11.6
Quincy	8	1.7	8.9
Brockton	8	1.7	8.5
Cambridge	8	1.7	8.0
Fall River	7	1.5	7.6
New Bedford	6	1.3	6.4
Lynn	4	0.9	---
Newton	4	0.9	---
Total Group 2	**77**	**16.7**	**8.6**
Group 3: Cities/Towns 50,000-75,000 population:			
Peabody	8	1.7	15.6
Plymouth	8	1.7	14.6
Haverhill	5	1.1	8.3
Somerville	6	1.3	8.0
Chicopee	4	0.9	7.3
Lawrence	5	1.1	7.0
Malden	4	0.9	---
Medford	3	0.6	---
Waltham	3	0.6	---
Weymouth	3	0.6	---
Brookline	1	0.2	---
Framingham	1	0.2	---
Taunton	1	0.2	---
Total Group 3	**52**	**11.3**	**6.8**
Group 4: Cities/Towns with < 50,000 population			
Total Group 4	**292**	**63.2**	**7.3**
Unknown City/Town	**4**	**---**	**---**
Outside MA	**2**	**---**	**---**
Total known city	**462**	**100.0**	**---**
Total	**468**	**---**	**7.3**

- The total suicide rate for cities with a population of 75,000-175,000 (8.6/100,000) was higher than the total rate for cities with a population over 175,000 (5.6/100,000) and the total rate of cities with a population of 50,000-75,000 (6.8/100,000).
- Between the two cities with a population over 175,000, Boston had the higher number (N=27, 4.8/100,000), but Worcester had the higher rate for suicide (8.0/100,000, N=14).
- Among cities with population of 75,000-175,000, Springfield had the highest number (N=20) and the highest rate (13.2/100,000) of suicide.

[1] Percent is based on known Massachusetts city of injury (N=462). Rate was not calculated on unknown city of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

Table 2.7: Places Where Suicide Occur: Number and Percent, MA 2005		
	N	**Percent[1]**
Buildings and surroundings:	**373**	**80.4**
House, apartment, including driveway, porch, yard	336	72.4
Hotel/motel	14	3.0
Jail, prison, detention facility	9	1.9
Hospital or medical facility	7	1.5
Supervised residential facility	3	0.7
Office building	1	0.2
Other commercial establishment	2	0.4
Abandoned house, building, or warehouse	1	0.2
Transportation utilities:	**27**	**5.8**
Motor vehicle (excl. school and public transportation)	11	2.4
Street/road, sidewalk, alley	6	1.3
Parking lot/public parking garage	4	0.9
Railroad track	6	1.3
Outdoor and recreational areas:	**44**	**9.5**
Natural area	39	8.4
Park, playground, public use area	5	1.1
Educational facilities:	**1**	**0.2**
College/University	1	0.2
Other:	**19**	**4.1**
Other	16	3.5
Industrial or construction areas	3	0.7
Unknown	**4**	**---**
Total Suicides	**468**	**100**

- Suicides typically occurred in a house, apartment, or its surroundings (72%).
- About 8% of suicides occurred in a natural area, such as woods and rivers.
- Nine suicides occurred in jail or in custody and one occurred at a school.
- Eleven suicides occurred in a motor vehicle and four of those were due to carbon monoxide poisoning.

[1] Percent is based on number of suicides with known place where suicide occurred (N=464).

SUICIDE CIRCUMSTANCES

Circumstance data included in analysis are for those victims where at least one circumstance category was known. Since some victims may have multiple circumstances noted, percent totals will not sum to 100%.

Table 2.8: Circumstances of Suicides: Number and Percent, MA 2005

Circumstance	N	Percent
Health Characteristics		
Current mental health problem	173	42.5
Prior mental health treatment	137	33.7
Current treatment for mental illness	126	31.0
Alcohol problem/other substance problem	96	23.6
History of suicide attempts	77	18.9
Physical health problem[1]	49	12.0
Relationship Characteristics		
Intimate partner problem	89	21.9
Other relationship problem	22	5.4
Other death of friend or family in past five years	21	5.2
Perpetrator of interpersonal violence past month	8	2.0
Life Stressors		
Financial problem	25	6.1
Job problem	21	5.2
Recent criminal legal problem	21	5.2
Other legal problems	10	2.5
Event Characteristics		
Current depressed mood	164	40.3
Person left a suicide note	133	32.7
Disclosed intent to commit suicide	65	16.0
Crisis in past two weeks	51	12.5

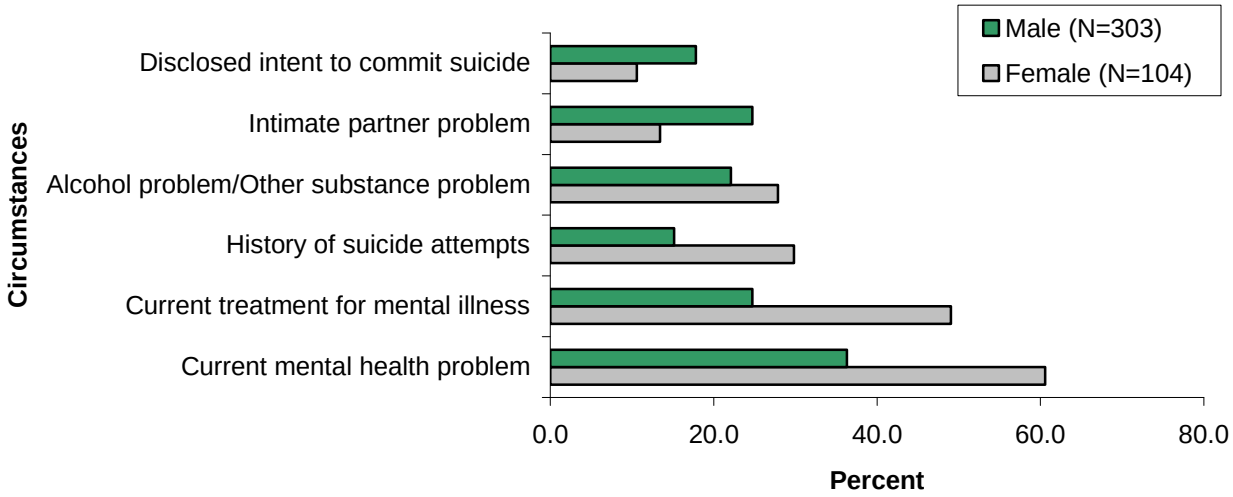
- There were a total of 352 males and 116 females who committed suicide. Eighty-seven percent of these victims had information about circumstances noted (N=407).
- Forty-three percent of the suicide victims had a current mental health problem. This is a broad category and includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.
- Forty percent of suicide victims were reported as being depressed by a family member or other witness. This does not necessarily indicate that there was a clinical diagnosis of depression, or treatment for this condition.
- In 22% of the suicides, victims were reported to be having problems with a current or former intimate partner, including divorce, jealousy, argument or other conflict.
- Almost one third of victims left a suicide note and 16% had disclosed their intent to harm themselves prior to completing suicide.

[1] Physical health problem was selected whether or not the health problem was stated in the file to have directly contributed to the suicide.

Table 2.9: Top Eight Most Commonly Mentioned Suicide Circumstances by Age Group, MA 2005				
	Age Group and Rank			
Circumstance	**15 to 24**	**25 to 44**	**45 to 64**	**65 and over**
Current depressed mood	**1**	**1**	2	4
Current mental health problem	2	2	**1**	3
Current treatment for mental illness	6	6	5	5
Prior mental health treatment	5	3	3	5
Alcohol /Other substance problem	3	4	8	--
History of suicide attempts	3	8	7	--
Intimate partner problem	7	5	--	--
Person left a suicide note	8	7	3	**1**
Disclosed intent to commit suicide	--	--	6	7
Physical health problem[1]	--	--	--	2
Crisis in past 2 weeks	--	--	--	7

- Numerical rank (1-8) was determined by frequency of mention. Circumstances with the same frequencies were both given the lower rank number.
- Through age 64, mental illness, depression, or substance abuse were most frequently noted.
- For older adults 65 and over, a physical health problem was noted in 38% of cases.

Figure 2.6 Commonly Mentioned Circumstances of Suicides with Known Information by Sex, MA 2005



- Information about suicide circumstances was available for 86% of males and 90% of females.
- Females were more likely than males to have a history of suicide attempts, a current mental health problem and/or treatment for a mental health disorder noted.
- A larger percentage of males were reported to have an intimate partner problem or to have disclosed their intent to commit suicide than females.

[1]Physical health problem was selected whether or not the health problem was stated in the file to have directly contributed to the suicide.

Table 2.10: Toxicology Results of Suicide Victims: Number and Percent, MA 2005				
	Victims Tested[1]		Victims Tested with Positive Results	
	N	Percent	N	Percent
Alcohol	393	84.0	140	35.6
Cocaine	394	84.2	46	11.7
Opioids	392	83.8	54	13.8
Marijuana	239	51.1	24	10.0

- Of the 468 suicide victims in Massachusetts in 2005, 393 (84%) were tested for blood alcohol concentration, 394 (84%) were tested for cocaine, 392 (84%) were tested for opioids, and 239 (51%) were tested for marijuana. The above table details the number and percent of victims that tested positive for those specific substances.

- In addition, 74% of victims (N=344) were also tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those tested, 40% (N=136) were positive for another substance. Tests for other substances may vary based upon the Medical Examiner's determination of need or clinical relevance.

Table 2.11: Blood Alcohol Concentration of Suicide Victims Tested by Age Group: Number and Percent, MA 2005[2]										
	Age Group									
	< 21		21-44		45-64		65+		Total	
BAC %	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
0.0 – 0.04	9	39.1	82	43.2	48	35.8	19	41.3	158	40.2
0.041 - 0.079	0	0.0	5	2.6	6	4.5	1	2.2	12	3.1
0.08 and over	3	13.0	45	23.7	25	18.7	3	6.5	76	19.3
Unknown[3]	11	47.8	58	30.5	55	41.0	23	50.0	147	37.4
Total	**23**	**100**	**190**	**100**	**134**	**100**	**46**	**100**	**393**	**100**

- The above table only refers to those victims who were tested for Blood Alcohol Concentration (N=393). Eighty-four percent of suicide victims were tested for blood alcohol concentration (BAC).

- BAC in the range of 0.0 - 0.04 could be due to decomposition effects and does not necessarily reflect alcohol ingestion. Victims with a BAC in this range comprise 40% of the total. These results must be interpreted with caution due to uncertainty of the cause of the elevated result.

- Among suicide victims where BAC was tested, 13% (N=3) of victims less than age 21 had a BAC over 0.04.Twenty-six percent of victims ages 21-44 had a BAC over 0.04. Among victims ages 45-64, 23% had a BAC over 0.04, and among victims aged 65 and over, 9% had a BAC over 0.04.

- Nineteen percent of all suicide victims who were tested had a BAC of 0.08 and over, which is over the legal limit for operating a motor vehicle in Massachusetts.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

Data Highlights for 2005:

- Homicides claimed an average of three lives per week (N=181) in 2005.
- Black, non-Hispanics had the highest homicide rate (16.5/100,000) compared to all other races, which ranged from 1.3-6.8/100,000.
- The homicide rate of males (4.9/100,000) was more than 5 times higher than the rate of females (0.9/100,000).
- In 2005, over half of homicides (60%) in Massachusetts involved firearms. The total number of homicides by firearms was 108.

Compared to 2004:

- The number of homicides remained relatively stable from 2004 to 2005. The number of homicides stayed the same for males (N=152) and decreased by a count of 2 for females (from N=31 in 2004 to N=29 in 2005.)
- Homicides claimed an average of approximately four lives per week (N=183) in 2004, which was slightly higher than in 2005.

Compared to the U.S.:

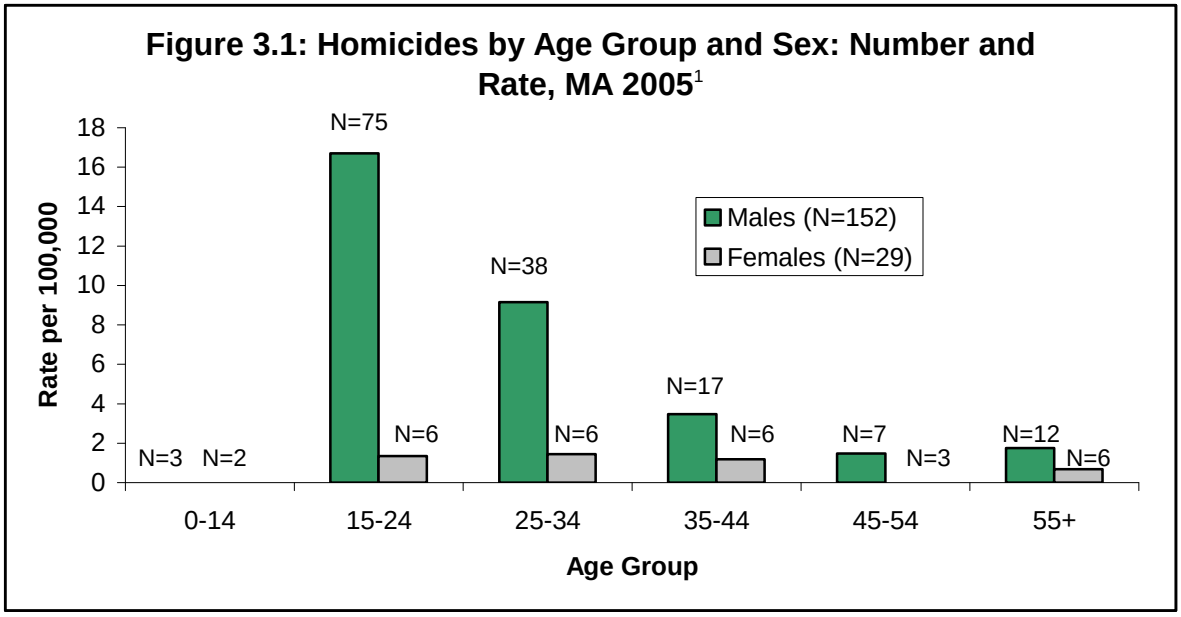
- Massachusetts had a lower age-adjusted homicide rate (2.8/100,000) than the U.S. age-adjusted rate for homicides (6.1/100,000) in 2005.
- In 2005, Massachusetts had an age-adjusted homicide rate for males (4.8/100,000) that was two times lower than that of the U.S. rate (9.6/100,000).
- The Massachusetts age-adjusted rate for female homicides (0.9/100,000) was 2.8 times lower than that of the U.S. age-adjusted rate for female homicides in 2005 (2.5/100,000).

Table 3.1: Homicides by Demographics: Number, Percent, and Rate, MA 2005			
	N	Percent	Rate per 100,000[1]
Sex			
Male	152	84.0	4.9
Female	29	16.0	0.9
Race/Ethnicity			
White, non-Hispanic	69	38.1	1.3
Black, non-Hispanic	65	35.9	16.5
Asian, non-Hispanic	5	2.8	1.6
Hispanic	34	18.8	6.8
Other/mixed[2]	8	4.5	---
Age Group			
0-14	5	2.8	0.4
15-24	81	44.8	9.1
25-34	44	24.3	5.2
35-44	23	12.7	2.3
45-54	10	5.5	1.0
55-64	7	3.9	1.0
65-74	7	3.9	1.7
75-84	3	1.7	---
85+	1	0.6	---
Total	**181**	**100**	**2.8**

ADDITIONAL FINDINGS FOR 2005:

- The youngest homicide victim was 6 months old and the oldest was 97 years old. The mean age for homicide victims was 30.8 and the median age was 25.
- Almost half of all homicide victims were age 24 or younger (48%) and over 70% were age 34 or younger.
- Eight war veterans[3] were victims of a homicide.
- Homicides in 2005 included:
  - one victim that was homeless.
  - three victims that died in custody, such as jail, state institution, or foster care.
  - six victims that died at their workplace.
- Black non-Hispanics accounted for approximately 36% of homicide victims, but make up 6% of the Massachusetts population. Hispanics accounted for about 19% of homicide victims and make up 8% of the Massachusetts population.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.



- The homicide rate for persons age 15-19 was 7.4/100,000 (N=33), which was 2.6 times higher than the statewide rate.
- The homicide rate for ages 20-24 was 10.8/100,000 (N=48), which was 3.9 times higher than the statewide rate.
- Males age 15-24 had the highest homicide rate (16.7/100,000), which was six times higher than the statewide rate.
- Males age 25-34 years (9.2/100,000) had the second highest homicide rate.
- For females, there was less variability in rates across age groups, with rates ranging from 0.0 to 1.4/100,000 across all age groups.

Table 3.2: Homicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2005

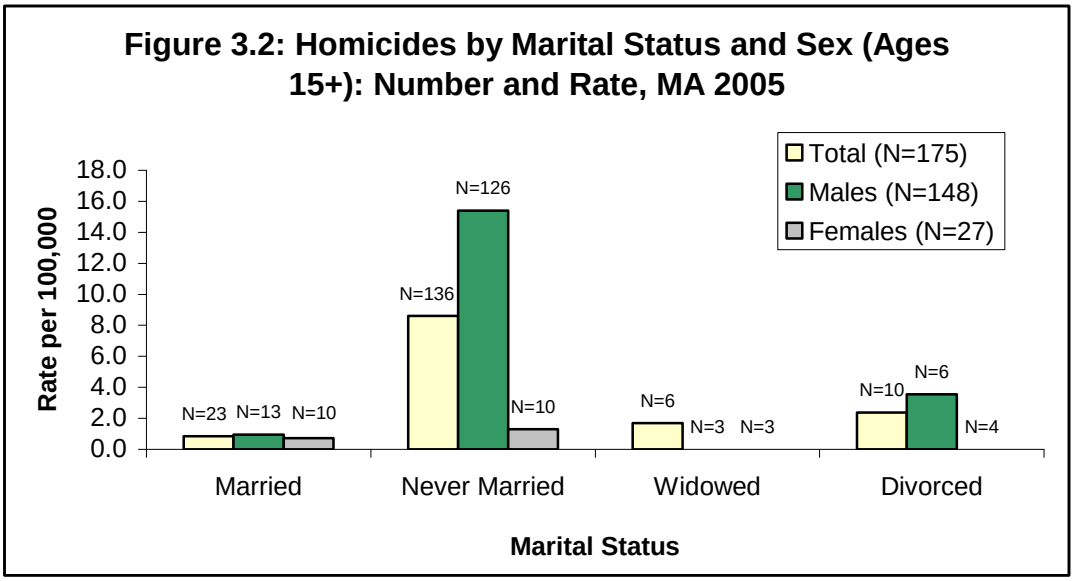
	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White, non-Hispanic	18	62.1	0.7	51	33.6	2.0
Black, non-Hispanic	4	13.8	---	61	40.1	31.9
Asian, non-Hispanic	1	3.4	---	4	2.6	---
Hispanic	5	17.2	2.0	29	19.1	11.7
Other/mixed[2]	1	3.4	---	7	4.6	---
Total	**29**	**100**	**0.9**	**152**	**100**	**4.9**

- Black, non-Hispanics had the highest homicide rate for males (31.9/100,000) and Hispanics had the highest rate for females (2.0/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rate.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 3.3: Homicide Victims (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2005[1]							
Years of Education	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000[2]
1-8	2	9.5	5	6.9	7	7.5	4.0
9-11	1	4.8	11	15.3	12	12.9	4.4[3]
12	11	52.4	42	58.3	53	57.0	
13-16	4	19.0	12	16.7	16	17.2	0.8
17 +	3	14.3	2	2.8	5	5.4	0.7
Total	**21**	**100**	**72**	**100**	**93**	**100**	**2.2**

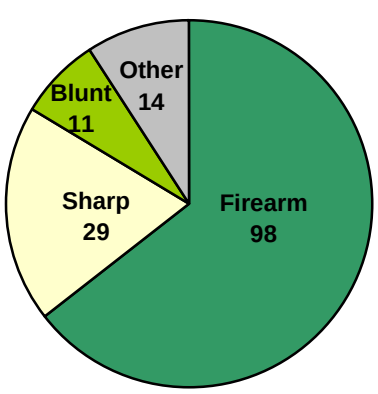
- Among homicide victims ages 25 and older, the highest homicide rate was among victims with 9-12 years of education (4.4/100,000).



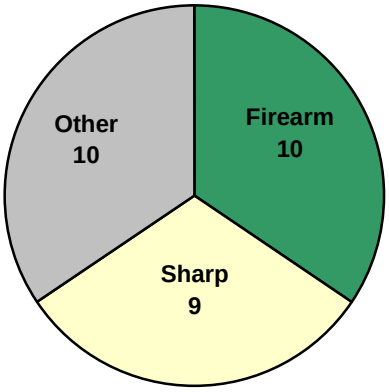
- Homicide rates for males were higher than rates for females, regardless of marital status.[4]
- Among males and females, homicide rates and numbers were highest among those who were never married (15.4/100,000, N=126 and 1.3/100,000, N=10, respectively)
- Males who were never married had a homicide rate 11.8 times higher than the rate of females who were never married.
- Homicide rates were lowest among widowed and married persons.

[1] There were two victims whose data element for education level was unknown. There was one victim whose data element for marital status was unknown
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.
[3] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 from 12th grade.
[4] Rates were calculated among victims age 15 and over to minimize the effect of age over marital status variable.

Figure 3.3: Homicides by Type of Weapon and Sex, MA 2005



Male (N=152)



Female (N=29)

Total (N=181)

- Firearms were the leading method of homicide and accounted for 60% of homicides (N=108), followed by sharp instruments, such as a knife (21%, N=38).
- Firearms were the most commonly used weapon for male homicide deaths, and accounted for 64% of male homicides (N=98), followed by sharp instruments (19%, N=29), and blunt instruments (7%, N=11).
- Among females, firearms were the most common weapon and accounted for 34% of female homicides (N=10), followed by sharp instruments (31%, N=9).
- Other weapons include bodily assaults (such as hands and feet), asphyxiation (such as strangulation), fire/burns, falls, neglect, and other weapons. See Appendix A for a complete list of weapon variables.
- There were nine homicide victims that died due to two or more types of weapons. Each weapon contributed equally to the death; however, for the analysis, the first weapon type was selected. Of the victims who died as a result of multiple weapons:
  - Seven victims died as a result of a combination of a sharp instrument and a blunt instrument.
  - One victim died from a blunt instrument combined with hanging.
  - One victim died as a result of a combination of a firearm, a blunt instrument, and hanging.

Table 3.4: Homicide Weapons by Age Group: Number and Percent, MA 2005											
	0-14		15-24		25-44		45-64		65+		Total
Weapon	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**
Firearm	0	0.0	56	69.1	42	62.7	7	41.2	3	27.3	108
Sharp instrument	0	0.0	18	22.2	15	22.4	3	17.6	2	18.2	38
Other	5	100.0	7	8.6	10	14.9	7	41.2	6	54.5	35
Total[1]	**5**	**100**	**81**	**100**	**67**	**100**	**17**	**100**	**11**	**100**	**181**

- Firearms were the most common weapon of homicide for age group 15-24 (69%) and 25-44 (63%). Sharp instruments were the second most common method (22% for each age group).
- For persons 45-64, firearms (41%) and sharp instruments (18%) were the most common methods.

Table 3.5 includes the total number of firearms used in homicide incidents. Multiple firearms might be used in one incident, or one firearm may be used in an incident where multiple persons were killed.

Table 3.5: Type of Firearm Used in Homicides: Number and Percent, MA 2005		
	N	**Percent**
Firearms Used In Homicides	108	100.0
Known Information	46	42.6
Unknown information	62	57.4
Handgun	41	89.1
Semi-automatic pistol	19	41.3
Revolver	10	21.7
Unknown Type	12	26.1
Rifle	3	6.5
Shotgun	2	4.3
Total	**46**	**100.0**

- Among a total of 108 firearms associated with homicide incidents, 46 (42.6%) had information about the type of firearm used.
- Handguns were the most common firearm type for homicides. Of handguns, semi-automatic pistols were used in 41% of homicides where firearm information was known.
- Massachusetts had a lower age-adjusted rate of firearm homicides (1.7/100,000) overall compared to the United States rate (4.1/100,000).[2]

[1] Some deaths resulted from the use of multiple weapons so totals are higher than victim totals.
[2] WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed July 2008

Table 3.6: Homicides by County: Number, Percent, and Rate, MA 2005			
County	**N**	**Percent**[1]	**Rate per 100,000**[2]
Population: 1,000,000+			
Middlesex	11	6.3	0.8
Population: 500,000 – 1,000,000			
Suffolk	80	45.7	11.6
Bristol	16	9.1	2.9
Worcester	11	6.3	1.4
Essex	10	5.7	1.4
Norfolk	1	0.6	---
Population: 100,000 – 500,000			
Hampden	28	16.0	6.1
Plymouth	11	6.3	2.2
Berkshire	3	1.7	---
Barnstable	2	1.1	---
Hampshire	1	0.6	---
Population: <100,000			
Franklin	1	0.6	---
Nantucket	0	0.0	0.0
Dukes	0	0.0	0.0
Unknown[2]	1	---	---
Outside MA[2]	5	---	---
Total	**181**	**100**	**2.8**

- Suffolk County had the highest homicide number and rate (N=80, 11.6/100,000) and accounted for 46% of deaths, followed by Hampden County (N=28, 6.1/100,000). The homicide rate of Suffolk County was 1.9 times higher than Hampden County.

- Among counties with a population of 500,000-1,000,000, Suffolk County, which includes Boston, had the highest number and rate. While 53% of the Massachusetts population lives in these counties, 65% of all homicides occurred here.

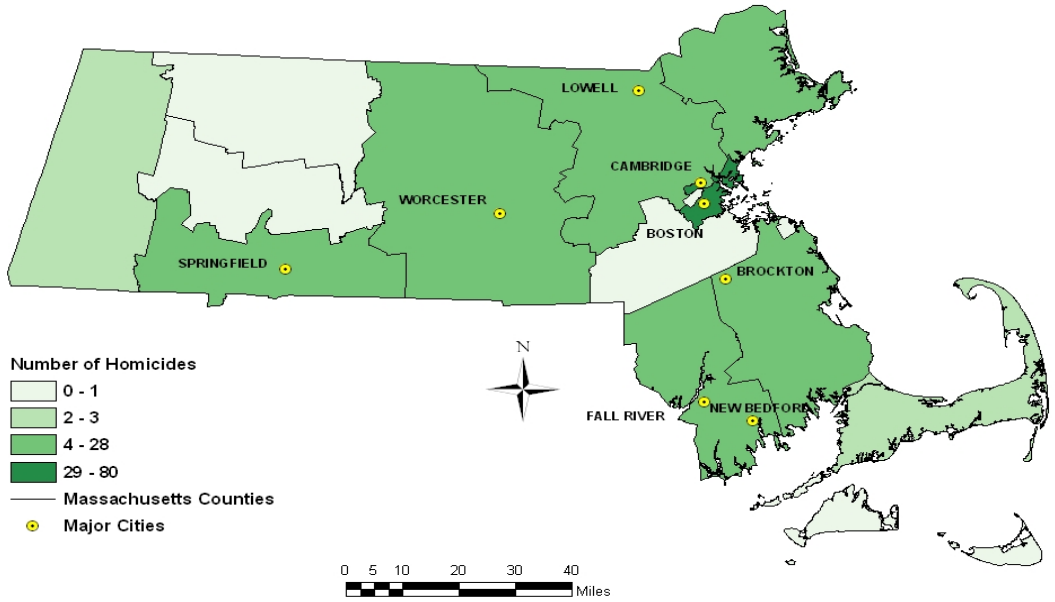
- Among counties with a population of 100,000-500,000, Hampden County, which includes Springfield, had the highest number and rate (N=28, 6.1/100,000).

[1] Percent is based on known Massachusetts county of injury (N=175). Rate was not calculated on unknown county of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.

LOCALITY OF HOMICIDES

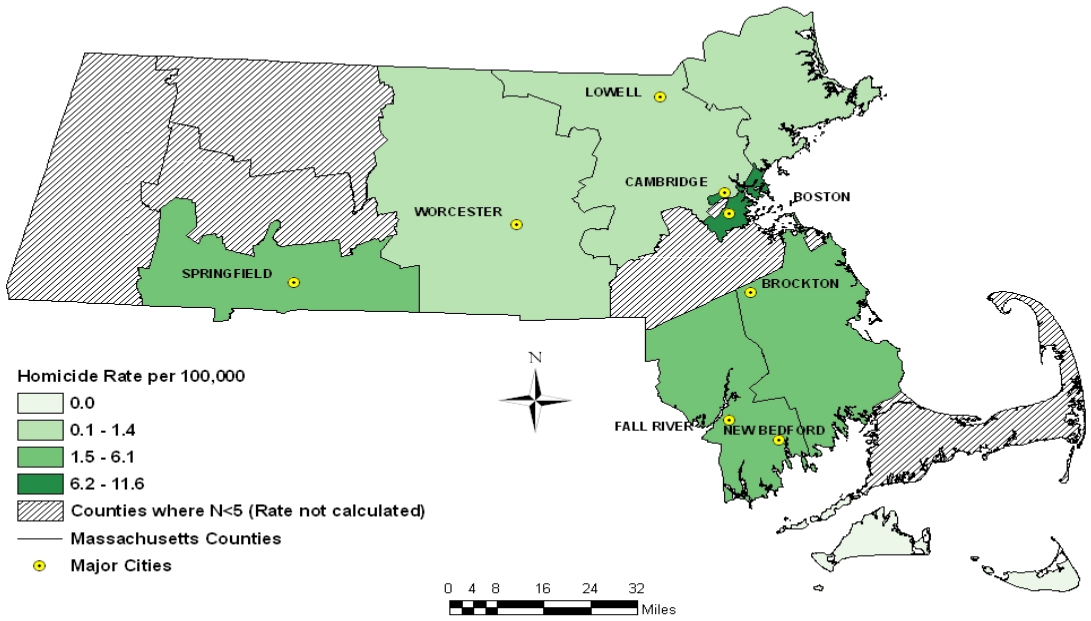
For county names please refer to the map on page 10 of the Introduction.

Figure 3.4: Homicides by County: Number, MA 2005



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS

Figure 3.5: Homicides by County: Rate, MA 2005



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health: Massachusetts Executive Office of Enfironmental Affairs, MassGIS

Table 3.7: Homicides by Cities/Towns: Number, Percent, and Rate, MA 2005			
	N	Percent[1]	Rate per 100,000[2]
Group 1: Cities/Towns over 175,000 population:			
Boston	75	42.9	13.4
Worcester	7	4.0	4.0
Total Group 1	**82**	**46.9**	**11.2**
Group 2: Cities/Towns 75,000-175,000 population			
Springfield	18	10.3	11.9
New Bedford	9	5.1	9.7
Brockton	8	4.6	8.5
Lynn	5	2.9	5.6
Cambridge	1	0.6	---
Fall River	3	1.7	---
Lowell	2	1.1	---
Newton	0	0.0	0.0
Quincy	0	0.0	0.0
Total Group 2	**46**	**26.3**	**5.1**
Group 3: Cities/Towns 50,000-75,000 population			
Chicopee	3	1.7	---
Malden	3	1.7	---
Taunton	3	1.7	---
Medford	1	0.6	---
Peabody	1	0.6	---
Brookline	0	0.0	0.0
Framingham	0	0.0	0.0
Haverhill	0	0.0	0.0
Lawrence	0	0.0	0.0
Plymouth	0	0.0	0.0
Somerville	0	0.0	0.0
Waltham	0	0.0	0.0
Weymouth	0	0.0	0.0
Total Group 3	**11**	**6.3**	**1.4**
Group 4: Cities/Towns <50,000 population			
Total Group 4	**36**	**20.6**	**0.9**
Unknown	**1**	**---**	**---**
Outside MA	**5**	**---**	**---**
Total known city	**175**	**100.0**	**---**
Total	**181**	**---**	**2.8**

- Boston had the highest number of homicides (N=75) and the highest rate (13.4/100,000). Springfield had the second highest number (N=18) and the second highest rate (11.9/100,000). These two cities account for more than 51% of all homicide victims, but account for 11% of the total population of Massachusetts.

- Among cities with a population of 75,000-175,000, Springfield had the highest number and rate (N=18, 11.9/100,000), followed by New Bedford (N=9, 9.7/100,000).

[1] Percent is based on known Massachusetts city of violent injury (N=175). Rate was not calculated on unknown city of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

Table 3.8: Places Where Homicides Occur: Number and Percent, MA 2005		
Location of injury	**N**	**Percent[1]**
Buildings and surroundings:	**78**	**43.8**
House, apartment, including driveway, porch, yard	73	41.0
Other commercial establishment	2	1.1
Abandoned house, building, or warehouse	2	1.1
Jail, prison, detention facility	1	0.6
Transportation utilities:	**72**	**40.4**
Street/road, sidewalk, alley	63	35.4
Motor vehicle (excl. school bus and public transportation)	9	5.1
Parking lot/public parking garage	7	3.9
Public transportation or station	3	1.7
Railroad track	1	0.6
Outdoor:	**5**	**2.8**
Park, playground, public use area	1	0.6
Natural area	4	2.3
Retail and entertainment:	**6**	**3.4**
Bar, nightclub	2	1.1
Service station	4	2.3
Other:	**6**	**3.4**
Other	6	3.4
Unknown	**3**	---
Total	**181**	**100**

- Over ¾ of homicides occurred in a residence (41%) or on the street (35%).
- Homicides occurred in a motor vehicle in 5% of the incidents (N=9).
- Homicides occurred in a parking lot/garage in 4% of the incidents (N=7).

[1] Percentages are based on the total number of cases for which location was known (N=178).

HOMICIDE CIRCUMSTANCES

Circumstance data were included for those victims where at least one circumstance category was known. Victims may have multiple circumstances noted so percent totals will not sum to 100%.

Table 3.9 : Circumstances of Homicide: Number and Percent, MA 2005[1]

Circumstance	N	Percent
Argument	47	43.1
Precipitated by another crime	29	26.6
Precipitating crime was in progress at time of homicide	27	24.8
Other homicide circumstance	12	11.0
Intimate partner violence related	11	10.1
Drug involvement	11	10.1
Argument over money/property	10	9.2
Jealousy (lovers' triangle)	5	4.6
Gang related	5	4.6
Victim used weapon	5	4.6
Victim was intervener assisting crime victim	5	4.6

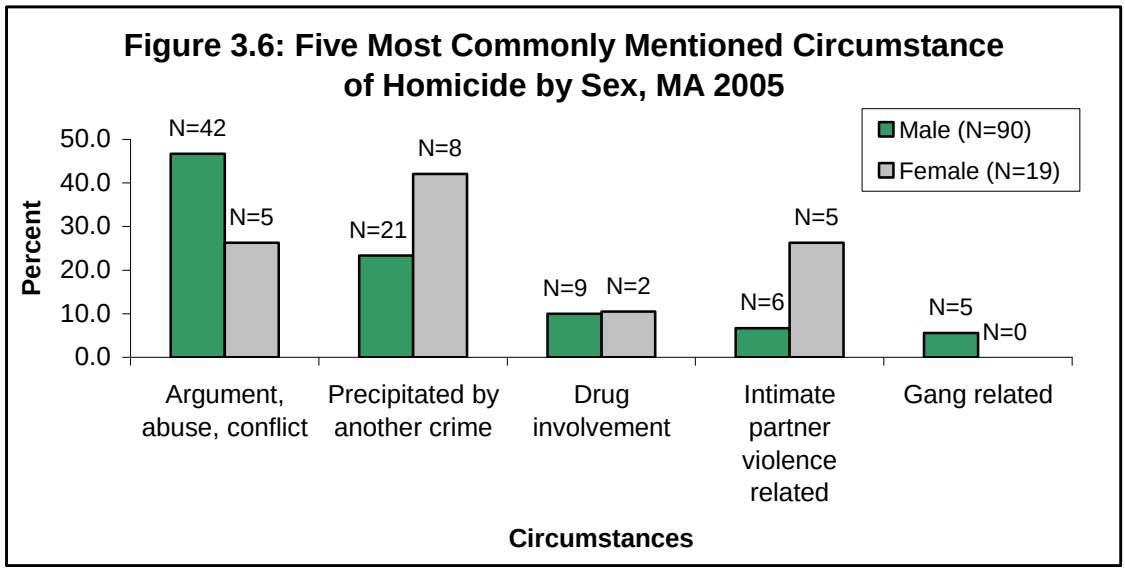
- Among 181 homicide victims, 60% (N=109) had at least one circumstance known.
- Forty-three percent of homicides where at least one circumstance was known were precipitated by an argument, abuse, or conflict. This excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.
- Ten percent of homicides where at least one circumstance was known involved intimate partner violence (N=11).
- Among all homicides that had information about circumstances, eleven were drug-related (10%).
- About 1/4 of homicides (27%) were precipitated by another crime, i.e. the homicide occurred as a result of another felony and homicide was not the primary intent. Those crimes include robbery, drug trade, burglary, arson, and assault.
- There were no deaths of police officers on duty, or hate crime fatalities reported to MAVDRS in 2005.
- The following circumstances were known to be present in less than five homicides: mercy killing, victim was bystander, and brawl/mutual physical fight.

[1] Circumstances were not included for counts less than five.

Table 3.10: Homicide Circumstances by Age Group: Number and Percent, MA 2005		
	N	**Percent**[1]
Age 15 to 24 (57% had information)		
Argument	20	43.5
Precipitated by another crime	13	28.3
Precipitating crime was in progress at time of homicide	13	28.3
Gang related	5	10.9
Age 25 to 44 (61% had information)		
Argument	16	39.0
Precipitated by another crime	6	14.6
Precipitating crime was in progress at time of homicide	6	14.6
Other homicide circumstance	6	14.6
Intimate partner violence related	5	12.2
Age 45 to 64 (65% had information)		
Argument	6	54.5
Precipitated by another crime	5	45.5

- Circumstance information was available for over half of all cases (57% - 65%).
- The most common known circumstance among ages 15-24 was other argument, abuse, conflict (44%), followed by homicides that were precipitated by another crime (28%). Those other crimes include robbery, drug trade, burglary, arson, and assault.
- Other argument, abuse conflict excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.
- Other homicide circumstances include drive-by shooting, random violence, mentally ill suspect, and other.

[1] Victims may have multiple circumstances noted so percent totals will not sum to 100%.



- There were a total of 152 male (84%) and 29 female homicide victims (16%).
- Of the 181 homicides, 59% of males (N=90) had circumstance information and 66% of females (N=19) had circumstances known; the total number of homicides with known circumstances was 109.
- Intimate partner violence contributed to 26% of female homicides and 7% of male homicides.
- The most common known circumstance for males was argument, abuse, conflict (47%) and the second most common circumstance was precipitated by another crime (23%), which includes robbery, drug trade, assault, burglary, and arson.
- For females, the most common circumstance was precipitated by another crime (42%), which includes robbery and drug trade.
- The second most common known circumstance (N=5) for female homicide victims was ***both*** intimate partner-related *and* argument, abuse, conflict (24%), which is an argument that cannot be classified as intimate partner violence-related, gang-related, drug-related, or money/property related.

Table 3.11: Toxicology Results of Homicide Victims Tested: Number and Percent, MA 2005				
	Victims Tested[1]		Victims Tested with Positive Results	
Substance	**N**	**Percent**	**N**	**Percent**
Alcohol	164	90.6	57	34.8
Cocaine	165	91.2	24	14.6
Opioid	162	89.5	7	4.3
Marijuana	97	53.6	31	32.0

- Among the 181 homicide victims, 164 (91%) were tested for alcohol, 165 (91%) were tested for cocaine, 162 (90%) were tested for opioids, and 97 (54%) were tested for marijuana. The above table details the number and percent of those victims who were tested and had positive results.

- Over 90% of homicide victims were tested for alcohol, cocaine, marijuana, and opioids. The majority of victims were not positive for substances. Thirty-five percent of victims tested for alcohol were positive for alcohol; 40% of these cases had results of .04 or less, which may be due to decomposition rather than ingestion of alcohol.

- In addition, 127 victims (70.2%) were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those tested, 14.2% (N=18) were positive.

Table 3.12: Blood Alcohol Concentration of Homicide Victims Tested by Age Group: Number and Percent, MA 2005[2]										
	Age Group									
	< 21		21-44		45-64		65+		Total	
BAC %	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
0.0 - 0.04[3]	19	47.5	37	37.8	5	33.3	4	36.4	65	39.6
0.041 - 0.079	2	5.0	9	9.2	0	0.0	0	0.0	11	6.7
0.08 and over	5	12.5	17	17.3	5	33.3	0	0.0	27	16.5
Unknown	14	35.0	35	35.7	5	33.3	7	63.6	61	37.2
Total	**40**	**100**	**98**	**100**	**15**	**100**	**11**	**100**	**164**	**100**

- Ninety-one percent (N=164) of homicide victims were tested for blood alcohol concentration (BAC).

- Among homicide victims where BAC was tested, 18% of victims less than age 21 had a BAC over 0.04. Twenty-seven percent of victims ages 21-44 had a BAC over 0.04 and among victims ages 45-64, about one-third (N=5) had a BAC over 0.04. These levels are more likely indicative of alcohol ingestion.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could possibly be due to decomposition rather than ingestion of alcohol.

Section 4: Deaths of Undetermined Intent in Massachusetts

Please note that an important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths where there was no explicit evidence that the case was a suicide or homicide were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional, like most other states.

Data Highlights for 2005:

- Deaths of undetermined intent claimed an average of two lives per week in 2005 (N=88).
- In 2005, white, non-Hispanics had the highest rate (1.6/100,000) for deaths of undetermined intent.
- The rate of undetermined intent deaths for males (1.6/100,000) was 1.5 times higher than for females (1.1/100,000).
- Seventy-three percent of deaths of undetermined intent (N=64) were the result of poisonings/drug overdoses.
- Eighty-six percent (N=76) of those whose deaths were of undetermined intent, were tested for opioids; of these, 45% were positive.

Compared to the U.S.:

- Massachusetts had a slightly lower age-adjusted rate (1.3/100,000) of undetermined intent deaths compared to the national age-adjusted rate (1.6/100,000).
- The age-adjusted rate for deaths of undetermined intent for males in 2005 was 1.9/100,000 in the U.S. and 1.5/100,000 in Massachusetts; the age-adjusted rate for deaths of undetermined intent for females was 1.2/100,000 in the U.S. and 1.1/100,000 in Massachusetts.

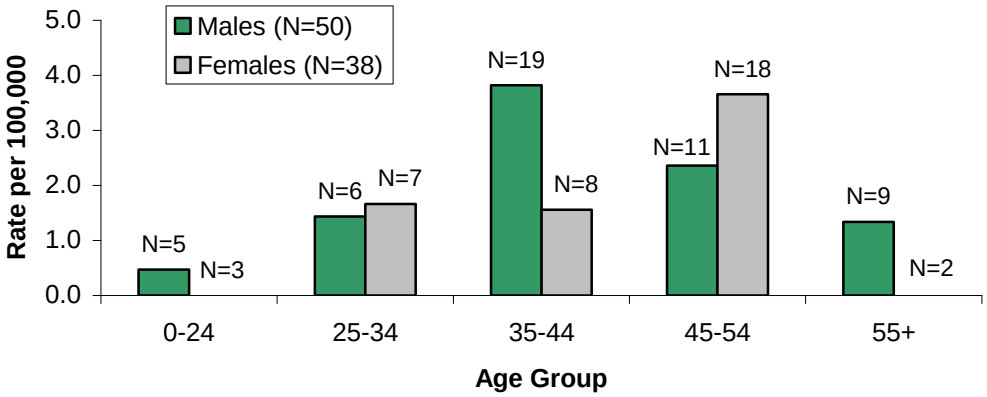
Table 4.1: Deaths of Undetermined Intent by Demographics: Number, Percent, and Rate, MA 2005			
	N	Percent	Rate per 100,000[1]
Sex			
Male	50	56.8	1.6
Female	38	43.2	1.1
Race/Ethnicity			
White, non-Hispanic	81	92.1	1.6
Black, non-Hispanic	5	5.7	1.3
Asian, non-Hispanic	1	1.1	---
Hispanic	1	1.1	---
Other/mixed[2]	0	0	0
Age Group			
0-14	1	1.1	---
15-24	7	8.0	0.8
25-34	13	14.8	1.6
35-44	27	30.7	2.7
45-54	29	33.0	3.0
55-64	10	11.4	1.5
65-74	0	0.0	0.0
75-84	0	0.0	0.0
85+	1	1.1	---
Total	**88**	**100**	**1.4**

ADDITIONAL FINDINGS FOR 2005:

- The youngest undetermined intent victim was 10 months old and the oldest was 86 years old.
- The mean age for undetermined intent victims was 41.8 and the median age was 44.
- There was one homeless person whose death was of undetermined intent.
- Two victims of undetermined intent died in custody, such as jail, state institution, or foster care.
- There were no deaths of undetermined intent that occurred at work.
- Five war veterans'[3] deaths were of undetermined intent.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran **and** the war in which they served was specified.

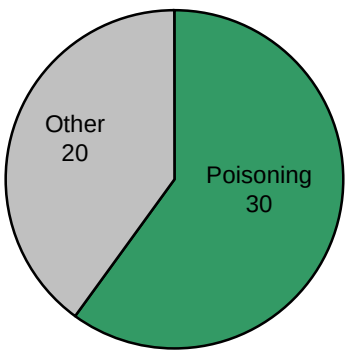
Figure 4.1: Deaths of Undetermined Intent by Age Group and Sex: Number and Rate, MA 2005[1]



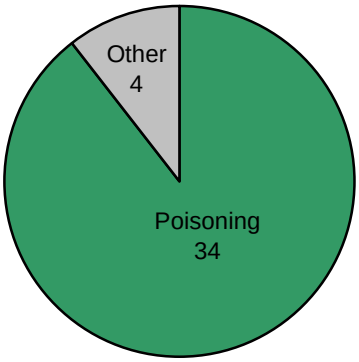
- For deaths of undetermined intent, approximately 72% of males and 87% females were between the ages 25-54.
- Persons aged 35-44 had the highest rate and number among males (3.8/100,000, N=19). For females, the highest number and rate was among those aged 45-54 (3.7/100,000, N=18).
- The lowest rates of deaths of undetermined intent were among persons less than age 25 and over 55 years of age.
- While males had higher rates than females, sex differences were less pronounced among undetermined intent deaths than for homicide or suicide. The overall rate among males was 1.5 times higher than that of females.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rate.

Figure 4.2: Deaths of Undetermined Intent by Type of Weapon and Sex, MA 2005



Male (N=50)



Female (N=38)

Total (N=88)

- The above graph shows weapon categories with frequencies greater than six. Weapon categories with six or fewer cases are combined into "other," which includes hanging, falls, drowning, other transport vehicle (e.g. train), and unknown weapon.

- Overwhelmingly, poisonings/drug overdoses account for a majority (73%) of deaths of undetermined intent in Massachusetts in 2005 (N=64). In cases where more than one weapon type was used, including multiple poisons, only the first weapon type was selected for the analysis in this report.

- Poisoning/drug overdose was the leading weapon for deaths of undetermined intent for both males (60%, N=30) and females (89%, N=34).

- Of the poisoning/drug overdose deaths (N=64):
  - 91% (N=58) were due to the ingestion of a street/recreation drug, alcohol, pharmaceutical prescription, or over-the counter medication.
  - 1.5% (N=1) were due to carbon monoxide poisoning
  - 1.5% (N=1) were due to the ingestion of another poison (such as insecticides or helium)
  - 6% (N=4) were due to an unknown poison

- Of the poisoning deaths, 53% of victims (N=34) ingested more than one poison/drug.

Table 4.2: Toxicology Results of Undetermined Intent Victims Tested: Number and Percent, MA 2005[1]				
	Victims Tested		Victims Tested with Positive Results	
	N	**Percent**	**N**	**Percent**
Alcohol	75	85.2	25	33.3
Cocaine	77	87.5	16	20.8
Opioids	76	86.4	34	44.7
Marijuana	52	59.1	4	7.7

- Of the 88 victims of undetermined intent deaths, 75 (85%) were tested for blood alcohol concentration, 77 (88%) were tested for cocaine, 76 (86%) were tested for opioids, and 52 (59%) were tested for marijuana.
- 80.7% (N=71) of victims were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those, 49.3% (N= 35) tested positive for an additional substance.
- Forty-five percent (N=34) of victims tested were positive for opioids. However, it is usually not possible to determine if the opioid was from a street drug, like heroin, or a prescription medication, such as codeine.

Table 4.3: Blood Alcohol Concentration of Undetermined Intent Victims Tested by Age Group: Number and Percent, MA 2005[2]										
	Age Group									
	< 21		**21-44**		**45-64**		**65+**		**Total**	
BAC%	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
0.0 - 0.04[3]	2	40.0	11	28.2	7	22.6	0	0.0	20	26.7
0.041 - 0.079	0	0.0	4	10.3	1	3.2	0	0.0	5	6.7
0.08 and over	0	0.0	10	25.6	6	19.4	0	0.0	16	21.3
Unknown	3	60.0	14	35.9	17	54.8	0	0.0	34	45.3
Total	**5**	**100**	**39**	**100**	**31**	**100**	**0**	**0**	**75**	**100**

- Eighty-five percent of undetermined intent victims were tested for blood alcohol concentration (BAC).
- Sixteen victims of an undetermined intent death had a BAC of over 0.08, all between the ages of 21 and 64. The legal limit for operating a motor vehicle in Massachusetts is 0.08.
- Twenty-seven percent of victims had a BAC in the 0.0 - 0.04 range. With BAC at these low levels, it cannot be determined if the source of the alcohol was due to the natural effects of decomposition and/or ingestion of an alcoholic beverage.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.

Appendix A: Technical Notes

- **Technical Notes**
- **Annual Estimates of the Population for Counties of Massachusetts, 2005**
- **Data Elements and Sources**
- **Primacy among Data Sources**
- **Circumstances**
- **Glossary**
- **Weapons**

Case Identification
Violent death cases in the MAVDRS database are first identified by reviewing the manner of death field on death certificates maintained by the Massachusetts Department of Public Health's Registry of Vital Records and Statistics (RVRS). A record is created in the MAVDRS database for any death categorized as homicide, suicide, or could not be determined. These deaths represent a preliminary violent death data file. The final data file is determined on the basis of International Classification of Diseases, Tenth Revision (ICD-10) codes for the underlying cause of death field on death certificates.

The ICD-10 codes that identify cases to be included in the MAVDRS states are determined by the CDC and are listed below:

	ICD-10 Code	
Manner of Death	**Death < 1 Year after the injury**	**Death >1 year after the injury**
• Intentional Self-Harm	X60-X84	Y87.0
• Assault	X85-X99, Y00-Y09	Y87.1
• Undetermined Intent	Y10-Y34	Y87.2, Y89.9
• Unintentional Firearm	W32-W34	Y86
• Legal Intervention, excluding executions	Y35.0-Y-35.4, 35.6, Y35.7	Y89.0
• Terrorism	U01, U03	U02

Before finalizing the database, a death file maintained by the RVRS is generated for all codes meeting the ICD-10 case definition. If discrepancies occur between the ICD-10 code and the manner of death field on the death certificate, i.e., the death certificate manner indicates suicide and the ICD-10 indicates undetermined intent, effort is made to resolve the discrepancy through follow up with the Office of Vital Records and Statistics and the Office of the Chief Medical Examiner (OCME). Cases are excluded when the ICD-10 code falls outside of the NVDRS ICD-10 case definition. In addition, a case is deleted from the database if an Affidavit and Correction of Death is submitted to Vital Records from the OCME changing the manner from homicide, suicide, or undetermined to natural or accident (unless the accident is firearm-related).

Deaths of Undetermined Intent
An important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years.

Veteran Status
MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran if a war was specified under the section on the death certificate that says, "If US war veteran, specify war." In addition, this report includes occurrent deaths only (deaths occurring in Massachusetts) and thus excludes deaths from military-related actions or other causes occurring outside Massachusetts.

Calculating Rates
In calculating rates for **race, Hispanic origin, sex, age group, and county**, population estimates were based on National Center for Health Statistics, Estimates of the July 1, 2000-July 1, 2006, United States resident population from the Vintage 2006 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a

collaborative arrangement with the U.S. Census Bureau. Available on the internet at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

Education and marital status rates were calculated using the U.S. Census Bureau's American Community Survey 2005 population found on the internet at: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=datasets_1&_lang=en&_ts=

City/town rates are calculated using 2004 population estimates from the U.S. Census Bureau's *Annual Estimates of the Population for Minor Civil Divisions in Massachusetts, Listed Alphabetically Within County: April 1, 2000 to July 1, 2004* (SUB-EST2004-05-25).

Data on the U.S. population was calculated using WISQARS, accessed May 2008. Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC; Data Source: NCHS Vital Statistics System for numbers of deaths, Bureau of Census for population estimates. On the web at: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html

Age-adjusted Rate: A summary rate was designed to minimize the distortions created by differences in age distribution when comparing rates for populations with different age compositions. Age-adjusted rates are useful when comparing death rates from different populations or in the same population over time. For example, if one wished to compare the 1998 death rates between Barnstable County (Cape Cod) and Hampshire County, the age-adjusted formula would account for the fact that 24% of the Barnstable County residents were 65 years of age or older, whereas only 11% of the Hampshire County residents were in this age group. Similarly, age-adjusted rates would be useful in comparing Massachusetts to another state with a very different age distribution.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of the Year 2000 U.S. Standard Population. The weighted age-specific rates are then added to produce the adjusted rate for all ages combined.

Annual Estimates of the Population for Counties of Massachusetts, 2005

Annual Estimates of the Population for Counties of Massachusetts, 2005		
County	**2005 Pop Est**	**% of pop**
Barnstable	226,161	3.5
Berkshire	131,783	2.1
Bristol	545,861	8.5
Dukes	15,553	0.2
Essex	734,261	11.4
Franklin	72,310	1.1
Hampden	460,828	7.2
Hampshire	153,353	2.4
Middlesex	1,464,985	22.8
Nantucket	10,139	0.2
Norfolk	652,530	10.1
Plymouth	491,934	7.6
Suffolk	691,965	10.8
Worcester	781,704	12.1
Total	**6,433,367**	**100.0**

DATA ELEMENTS AND SOURCES

Data sources utilized by MAVDRS include death certificates, medical examiner records, police reports, Supplementary Homicide Reports (SHR), National Incident Based Reporting System (NIBRS) reports, emergency department records, Emergency Medical Services reports (EMS), and the Massachusetts State Police Crime Laboratory. Over 270 data elements may be collected for each incident in the database, including information on: the incident, person or persons (victim and suspect), toxicology, weapon(s), circumstances associated with a homicide or suicide, relationship between a suspect and victim, and relationship between a person and weapon. More information on the NVDRS data elements and coding protocols is available at the NVDRS website: http://www.cdc.gov/ncipc/pub-res/nvdrs-coding/VS2/default.htm.

Death certificates: Death certificates serve as an important data source for the cause of death, place and date of death, and demographic information on the victim. Also included on the death certificates are fields for injury information, including date, time, location, address of injury, and if the injury occurred at work. It is the only source used for the assignment of the ICD-10 code, as well as the official legal and public document of the death.

Medical Examiner files: Medical examiner records include toxicology reports that typically test for alcohol, cocaine, and opioids, as well as other drugs. Records will also have details on wounds and other injury circumstances.

Police Reports: Data from law enforcement agencies (city and town police reports) include demographics of victims and suspects, relationships between victims and suspects, weapons, and circumstances, as well as data from SHR and NIBRS.

SHR/NIBRS: The SHR and NIBRS are incident-based reports voluntarily submitted by local law enforcement agencies to the Federal Bureau of Investigation as part of an aggregate crime reporting system. Massachusetts cities and towns participate either in NIBRS or SHR, and approximately half of the jurisdictions currently participate in either system. The MAVDRS database includes data elements for SHR but not for NIBRS. In Massachusetts, NIBRS information is entered in police report data fields. For incidents where information is available from both police and NIBRS, information from the police takes precedence.

Crime Lab (ballistics): The Massachusetts State Police Crime Lab provides weapon and ballistics information for firearm-related deaths. Details of the Crime Lab report include make and model of the firearm, caliber or gauge, and other ballistics information.

PRIMACY AMONG DATA SOURCES

NVDRS has predetermined rules governing data source primacy when multiple sources are available for the same variable. Data sources have been ranked in terms of their likely accuracy for each data element. The source with first primacy is considered most reliable for a given variable and will be the source of choice. Lower primacy sources are used when a higher primacy source is not available. In the case of a victim's sex, for instance, primacy rules establish the death certificate as the preferred data source, OCME records as the second choice, and police records as the third choice.

NVDRS data file: Data from all sources is entered into the MAVDRS database using software and standards provided to participating states by the Centers for Disease Control and Prevention (CDC).

CIRCUMSTANCES

The list of circumstances is generated based on the manner of death assigned when the record is created. For instance, if the death certificate says “homicide”, then the person abstracting data (referred to as the “Abstractor”) would choose homicide and appropriate homicide circumstances are entered. For suicides and deaths of undetermined intent, the same set of circumstances is used. Variables collected for homicides are not the same as those for suicides or deaths of undetermined intent and vice versa.

Homicide Circumstances include the following:

Precipitated by another crime
- Nature of first other crime
- Nature of second other crime

Argument over money/property
Jealousy (lovers` triangle)
Intimate partner violence related
Other argument, abuse, conflict
Drug involvement
Gang related
Hate crime
Brawl (mutual physical fight)
Terrorist attack
Victim was a bystander
Victim was a police officer on duty
Victim used weapon
Intervener assisting crime victim
Mercy killing
Other (includes drive-by shooting)

Suicide/Undetermined Circumstances include the following:

Current depressed mood
Current mental health problem
Type of first mental illness diagnosed
Type of second mental illness diagnosed
Other mental health diagnosis
Current treatment for mental illness
Ever treated for mental illness
Alcohol problem
Other substance problem
Person left a suicide note
Disclosed intent to commit suicide
History of suicide attempts
Crisis in the past two weeks
Physical health problem
Intimate partner problem
Other relationship problem
Job problem
School problem
Financial problem
Suicide of friend or family in past 5 years
Other death of friend or family
Recent criminal legal problem
Other legal problems
Perpetrator of interpersonal violence
Victim of interpersonal violence
Other

Unintentional Firearm Circumstances include the following:

Hunting
Target shooting
Self-defensive shooting
Celebratory firing
Loading/unloading gun
Cleaning gun
Showing gun to others
Playing with gun
Thought safety was engaged
Thought unloaded: magazine disengaged
Thought gun was unloaded, other
Unintentionally pulled trigger
Bullet ricochet
Gun defect or malfunction
Fired while holstering/unholstering
Dropped gun
Fired while operating safety/lock
Gun mistaken for toy
Other

GLOSSARY

Asphyxiation: the condition of being deprived of oxygen and synonymous with suffocation.

Blunt instrument: a weapon that does not have a sharp or penetrating point, such as a club or a bat.

Brawl: three or more persons involved in a mutual, physical fight. The brawl may or may not escalate to involve weapons. This excludes one-sided physical fight (e.g., a group beats a single victim to death) or a fight between only two people.

Current depressed mood: identifies victims who were documented as having a current depressed mood by a family member or someone close to the victim. Family may frequently report that a victim "had been depressed lately" but the record does not supply information about whether the person was diagnosed with a depressive disorder. Rather than coding such a victim as suffering from depression (which may or may not be true), this variable captures the available information more appropriately. The depressed mood may be part of a clinical depression or a short-term sadness. Depressed mood should not be inferred by the coder based on the circumstances; rather it must be noted in the record.

Current Mental Health Problem: identifies victims who were identified as having a mental health problem. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) with the exception of alcohol and other substance dependence (as these are captured in separate variables). Diagnoses are: Depression/dysthymia, Bipolar disorder, Schizophrenia, Anxiety disorder, Post-traumatic stress disorder, ADD or hyperactivity disorder, Eating disorder, Obsessive-compulsive disorder, Other (specify in diagnosis text), including mental retardation, autism, personality disorders, Alzheimer's, etc. "Yes" is indicated if it is mentioned in the OCME or police report that the victim was being treated for a mental health problem even if the nature of the problem is unclear (e.g., "was being treated for various psychiatric problems"). This variable should also be coded as "Yes" if the victim has a prescription for an antidepressant or other psychiatric medication.

Current Treatment for Mental Health Problem: identifies victims who were in current treatment for a mental health problem in the last two months. Treatment includes seeing a psychiatrist, psychologist, medical doctor, therapist, or other counselor for a mental health or substance abuse problem; receiving a prescription for an anti-depressant or other psychiatric medication; or residing in an inpatient or halfway house facility for mental health problems. Treatment also includes past treatment, unless noted that the problem has been resolved. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) with the exception of alcohol and other substance dependence (as these are captured in separate variables).

Drowning: weapon of submersion in water or other liquid

Fall: weapon resulting from a fall, push, or jump from a high place

Homicide: death resulting from the intentional use of force or power, threatened or actual, against another person, group, or community

Incident: violent death incident can be made up of any of the following:

1. One isolated violent death
2. Two or more homicides, including legal interventions, when the deaths involve at least one person who is a suspect or victim in the first death and a suspect and victim in the second death and the fatal injuries are inflicted less than 24 hours apart
3. Two or more suicides or undetermined manner deaths, when: there is some evidence that the second or subsequent death was planned to coincide with and follow the preceding death and the fatal injuries are inflicted less than 24 hours apart
4. One or more homicides or unintentional firearm deaths combined with one or more suicides when: the suspect in the first death is the person who commits suicide, and the fatal injuries are inflicted less than 24 hours apart
5. Two or more unintentional firearm deaths when the same firearm inflicts two or more fatal injuries and the fatal injuries are inflicted by one shot or burst of shots

Legal Intervention Death: death when the decedent was killed by a police officer or other peace officer (persons with specified legal authority to use deadly force), including military police, acting in the line of duty

Personal weapons: includes the body, such as fists, feet, or hands used as a weapon

Poisoning: weapon including drugs (prescription, street, or alcohol), toxins, chemical substances, or gas (such as carbon monoxide)

Suffocation: condition of being deprived of oxygen and synonymous with asphyxiation

Sharp instrument: weapons that have a cutting edge or penetrating point, such as a knife, razor, chisel, or broken glass

Suicide: death resulting from the intentional use of force against oneself; a preponderance of evidence should indicate that the use of force was intentional

Terrorism-related death: homicides or suicides that result from events that are labeled by the Federal Bureau of Investigation (FBI) as acts of terrorism, which is a mechanism of death rather than a manner of death, where the manner of such death is either homicide or suicide. This designation can only be applied when federal authorities define the death as such.

Unintentional firearm death: deaths resulting from gunshot wounds inflicted by the victim or another person unintentionally

Undetermined manner of death: an event where available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm, and assault (from the ICD-10 code definition)

Veteran Status: MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran if a war was specified under the section on the death certificate that says, "If US war veteran, specify war."

Violent Death: A death that results from the intentional use of physical force or power, threatened or actual, against oneself, another person, or a group or community. The person using the force or power need only have intended to use force or power; they need not have intended to produce the consequence that actually occurred. "Physical force" should be interpreted broadly to include the use of poisons or drugs. The word "power" includes acts of neglect or omission by one person who has control over another. In addition, MAVDRS captures unintentional firearm deaths.

WEAPONS

Weapons, as defined by NVDRS, differ slightly from the typical use of the term (firearm, knife, etc) and can include neglect or a means (drowning, fall) as well.

The following are the weapon choices for NVDRS:

Firearm
Non-powder gun
Sharp instrument
Blunt instrument
Poisoning
Hanging, strangulation, suffocation
Personal weapons
Fall
Explosive
Drowning
Fire or burns
Shaking, (e.g., shaken baby syndrome)
Motor Vehicle, including buses, motorcycles (not vehicular homicides- only when person is deliberately hit with a motor vehicle)
Other transport vehicle, (e.g., trains, planes, boats)
Intentional neglect, (e.g., starving a baby)
Biological weapons
Other
Unknown

Appendix B: Violent Death Age-adjusted Rates

Table 1. Violent Deaths by Intent and Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95% CI)
Intent				
Suicide	468	63.2	7.3	7.0 (6.4-7.7)
Homicide	181	24.4	2.8	2.8 (2.4-3.3)
Undetermined	88	11.9	1.4	1.3 (1.0-1.6)
Unintentional firearm[2]	3	0.4	---	---
Legal Intervention[2]	1	0.1	---	---
Sex				
Male	558	75.3	17.9	17.6 (16.2-19.1)
Female	183	24.7	5.5	5.3 (4.5-6.1)
Race/Ethnicity				
White, non-Hispanic	560	75.6	10.7	10.3 (9.4-11.1)
Black, non-Hispanic	86	11.6	21.8	20.4 (16.0-24.8)
Asian, non-Hispanic	21	2.8	6.7	7.2 (3.8-10.7)
Hispanic	64	8.6	12.8	11.8 (8.7-14.9)
Other/mixed[3]	10	1.3	---	---
Age Group				
0-14	9	1.2	0.7	NA
15-24	142	19.2	16.0	NA
25-34	138	18.6	16.5	NA
35-44	155	20.9	15.3	NA
45-54	133	18.0	13.9	NA
55-64	80	10.8	11.8	NA
65-74	40	5.4	9.8	NA
75-84	30	4.1	9.6	NA
85+	14	1.9	10.5	NA
Total	**741**	**100**	**11.5**	**11.2 (10.4-12.1)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for unintentional firearm and legal intervention deaths were not calculated due to lack of denominator information.
[3] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 2. Violent Deaths by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	156	85.2	5.8	5.4 (4.5-6.3)
Black, non-Hispanic	8	4.4	3.9	3.9 (1.2-6.7)
Asian, non-Hispanic	8	4.4	5.0	5.5 (1.4-9.6)
Hispanic	9	4.9	3.6	4.1 (1.2-7.0)
Other/mixed [2]	2	1.1	---	---
Total	**183**	**100**	**5.5**	**5.3 (4.5-6.1)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
White, non-Hispanic	404	72.4	16.1	15.6 (14.1-17.1)
Black, non-Hispanic	78	14.0	40.8	38.1 (29.2-47.0)
Asian, non-Hispanic	13	2.3	8.4	9.6 (3.2-16.1)
Hispanic	55	9.9	22.1	19.3 (13.9-24.7)
Other/mixed[2]	8	1.5	---	---
Total	**558**	**100**	**17.9**	**17.6 (16.2-19.1)**

Table 3. Violent Deaths by County: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2005[1]				
County	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	24	3.5	10.6	10.8 (6.3-15.2)
Berkshire	15	2.2	11.4	10.7 (5.2-16.2)
Bristol	44	6.4	8.1	8.0 (5.6-10.3)
Dukes	1	0.1	6.4	4.3 (-4.2-12.8)
Essex	77	11.1	10.5	10.5 (8.1-12.9)
Franklin	14	2.0	19.4	17.9 (8.4-27.4)
Hampden	86	12.4	18.7	18.5 (14.5-22.4)
Hampshire	13	1.9	8.5	8.0 (3.6-12.5)
Middlesex	110	15.9	7.5	7.2 (5.8-8.5)
Nantucket	1	0.1	9.9	7.7 (-7.4-22.7)
Norfolk	43	6.2	6.6	6.5 (4.6-8.5)
Plymouth	59	8.5	12.0	11.8 (8.8-14.9)
Suffolk	126	18.2	18.2	16.6 (13.6-19.5)
Worcester	79	11.4	10.1	10.0 (7.8-12.2)
Total	**741**	**100**	**11.5**	**11.2 (10.4-12.1)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 4. Suicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
	N	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
Sex				
Male	352	75.2	11.3	11.2 (10.0-12.3)
Female	116	24.8	3.5	3.3 (2.7-3.9)
Race/Ethnicity				
White, non-Hispanic	407	87.0	7.8	7.4 (6.7-8.1)
Black, non-Hispanic	15	3.2	3.8	4.2 (2.0-6.4)
Asian, non-Hispanic	15	3.2	4.8	5.2 (2.2-8.3)
Hispanic	29	6.2	5.8	6.3 (3.8-8.7)
Other/mixed[2]	2	0.4	---	---
Age Group				
0-14	2	0.4	---	NA
15-24	53	11.3	6.0	NA
25-34	80	17.1	9.5	NA
35-44	104	22.2	10.3	NA
45-54	94	20.1	9.8	NA
55-64	63	13.5	9.3	NA
65-74	33	7.1	8.1	NA
75-84	27	5.8	8.6	NA
85+	12	2.6	9.0	NA
Total	**468**	**100**	**7.3**	**7.0 (6.4-7.7)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 5. Suicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2005[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	103	88.8	3.8	3.5 (2.8-4.2)
Black, non-Hispanic	2	1.7	---	---
Asian, non-Hispanic	6	5.2	3.8	4.2 (0.5-7.9)
Hispanic	4	3.4	---	---
Other/mixed[2]	1	0.9	---	---
Total	**116**	**100**	**3.5**	**3.3 (2.7-3.9)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	304	86.4	12.1	11.7 (10.4-13.1)
Black, non-Hispanic	13	3.7	6.8	7.7 (3.1-12.3)
Asian, non-Hispanic	9	2.6	5.8	6.8 (1.0-12.6)
Hispanic	25	7.1	10.1	10.3 (6.0-14.7)
Other/mixed[2]	1	0.3	---	---
Total	**352**	**100**	**11.3**	**11.2 (10.0-12.3)**

Table 6. Suicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
County	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	19	4.1	8.4	8.6 (4.6-12.6)
Berkshire	9	2.0	6.8	5.8 (1.9-9.7)
Bristol	24	5.2	4.4	4.3 (2.5-6.0)
Dukes	1	0.2	6.4	4.3 (-4.2-12.8)
Essex	65	14.1	8.9	8.8 (6.7-11.0)
Franklin	11	2.4	15.2	13.5 (5.4-21.6)
Hampden	47	10.2	10.2	10.0 (7.1-12.9)
Hampshire	11	2.4	7.2	6.8 (2.7-11.0)
Middlesex	90	19.5	6.1	5.8 (4.6-7.1)
Nantucket	1	0.2	9.9	7.7 (-7.4-22.7)
Norfolk	39	8.4	6.0	5.8 (4.0-7.7)
Plymouth	41	8.9	8.3	8.1 (5.6-10.6)
Suffolk	41	8.9	5.9	5.7 (4.0-7.5)
Worcester	63	13.6	8.1	7.9 (6.0-9.9)
Total	**468**	**100**	**7.3**	**7.0 (6.4-7.7)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 7. Homicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	152	84.0	4.9	4.8 (4.0-5.6)
Female	29	16.0	0.9	0.9 (0.6-1.2)
Race/Ethnicity				
White, non-Hispanic	69	38.1	1.3	1.3 (1.0-1.7)
Black, non-Hispanic	65	35.9	16.5	14.8 (11.8-18.5)
Asian, non-Hispanic	5	2.8	1.6	1.6 (0.2-3.1)
Hispanic	34	18.8	6.8	5.2 (3.5-7.1)
Other/mixed[2]	8	4.5	---	---
Age Group				
0-14	5	2.8	0.4	NA
15-24	81	44.8	9.1	NA
25-34	44	24.3	5.2	NA
35-44	23	12.7	2.3	NA
45-54	10	5.5	1.0	NA
55-64	7	3.9	1.0	NA
65-74	7	3.9	1.7	NA
75-84	3	1.7	---	NA
85+	1	0.6	---	NA
Total	**181**	**100**	**2.8**	**2.8 (2.4-3.3)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 8. Homicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	18	62.1	0.7	0.6 (0.3-0.9)
Black, non-Hispanic	4	13.8	---	---
Asian, non-Hispanic	1	3.4	---	---
Hispanic	5	17.2	2.0	1.8 (0.2-3.5)
Other/mixed [2]	1	3.4	---	---
Total	**29**	**100**	**0.9**	**0.9 (0.6-1.2)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	51	33.6	2.0	2.0 (1.5-2.6)
Black, non-Hispanic	61	40.1	31.9	28.5 (21.1-35.9)
Asian, non-Hispanic	4	2.6	---	---
Hispanic	29	19.1	11.7	8.5 (5.4-11.6)
Other/mixed[2]	7	4.5	---	---
Total	**152**	**100**	**4.9**	**4.8 (4.0-5.6)**

Table 9. Homicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
County	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	2	1.1	0.9	1.0 (-0.4-2.3)
Berkshire	3	1.7	2.3	2.1 (-0.3-4.5)
Bristol	16	9.1	2.9	3.0 (1.5-4.5)
Dukes	0	0.0	0.0	0.0 (0.0-0.0)
Essex	10	5.7	1.4	1.4 (0.5-2.3)
Franklin	1	0.6	1.4	1.4 (-1.3-4.0)
Hampden	28	16.0	6.1	6.1 (3.8-8.4)
Hampshire	1	0.6	0.7	0.6 (-0.6-1.9)
Middlesex	11	6.3	0.8	0.7 (0.3-1.2)
Nantucket	0	0.0	0.0	0.0 (0.0-0.0)
Norfolk	1	0.6	0.2	0.2 (-0.2-0.5)
Plymouth	11	6.3	2.2	2.4 (1.0-3.8)
Suffolk	80	45.7	11.6	10.0 (7.8-12.3)
Worcester	11	6.3	1.4	1.4 (0.6-2.3)
Total	**181**	**100**	**2.8**	**2.8 (2.4-3.3)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 10. Deaths of Undetermined Intent by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	50	56.8	1.6	1.5 (1.1-2.0)
Female	38	43.2	1.1	1.1 (0.8-1.5)
Race/Ethnicity				
White, non-Hispanic	81	92.1	1.6	1.5 (1.2-1.8)
Black, non-Hispanic	5	5.7	1.3	1.2 (0.1-2.2)
Asian, non-Hispanic	1	1.1	---	---
Hispanic	1	1.1	---	---
Other/mixed[2]	0	0.0	0.0	0.0
Age Group				
0-14	1	1.1	---	NA
15-24	7	8.0	0.8	NA
25-34	13	14.8	1.6	NA
35-44	27	30.7	2.7	NA
45-54	29	33.0	3.0	NA
55-64	10	11.4	1.5	NA
65-74	0	0.0	0.0	NA
75-84	0	0.0	0.0	NA
85+	1	1.1	---	NA
Total	**88**	**100**	**1.4**	**1.3 (1.0-1.6)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 11. Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	35	92.1	1.3	1.3 (0.8-1.7)
Black, non-Hispanic	2	5.3	---	---
Asian, non-Hispanic	1	2.6	---	---
Hispanic	0	0.0	0.0	0.0
Other/mixed[2]	0	0.0	0.0	0.0
Total	**38**	**100**	**1.1**	**1.1 (0.8-1.5)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	46	92.0	1.8	1.7 (1.2-2.2)
Black, non-Hispanic	3	6.0	---	---
Asian, non-Hispanic	0	0.0	0.0	0.0
Hispanic	1	2.0	---	---
Other/mixed[2]	0	0.0	0.0	0.0
Total	**50**	**100**	**1.6**	**1.5 (1.1-2.0)**

Table 12. Deaths of Undetermined Intent by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2005[1]				
County	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	3	5.9	1.3	1.2 (-0.2-2.6)
Berkshire	2	3.9	1.5	1.9 (-0.7-4.5)
Bristol	4	7.8	0.7	0.7 (0.0-1.4)
Dukes	0	0.0	0.0	0.0 (0.0-0.0)
Essex	2	3.9	0.3	0.3 (-0.1-0.6)
Franklin	2	3.9	2.8	3.0 (-1.2-7.2)
Hampden	10	19.6	2.2	2.1 (0.8-3.4)
Hampshire	1	2.0	0.7	0.5 (-0.5-1.6)
Middlesex	9	17.7	0.6	0.6 (0.2-1.0)
Nantucket	0	0.0	0.0	0.0 (0.0-0.0)
Norfolk	2	3.9	0.3	0.4 (-0.1-0.9)
Plymouth	7	13.7	1.4	1.4 (0.3-2.4)
Suffolk	5	9.8	0.7	0.8 (0.1-1.5)
Worcester	4	7.8	0.5	0.5 (0.0-1.0)
Total	**88**	**100**	**1.4**	**1.3 (1.0-1.6)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.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